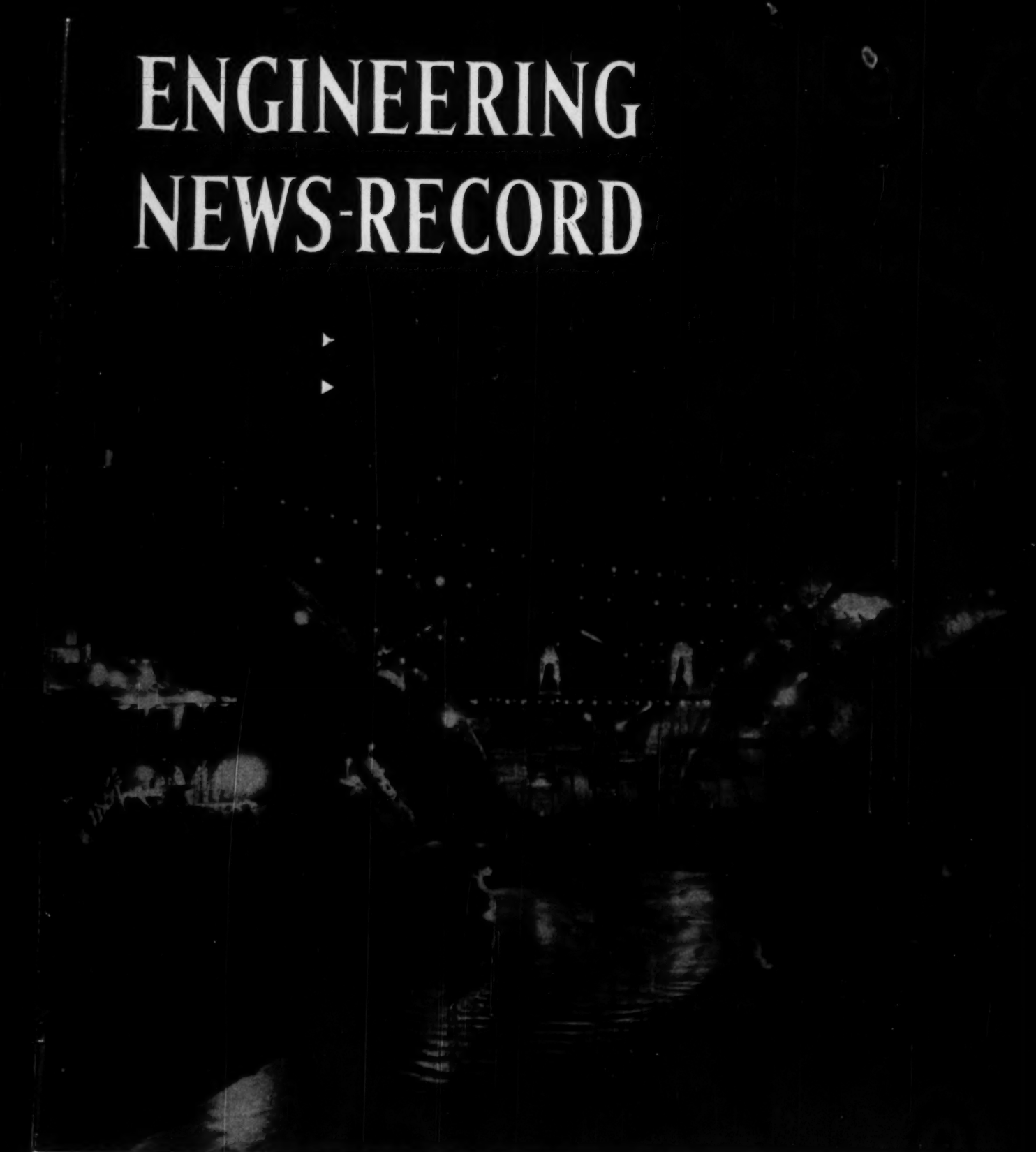
ENGINEERING NEWS-RECORD



Continuous concreting pushes Bhakra to second stage p.34

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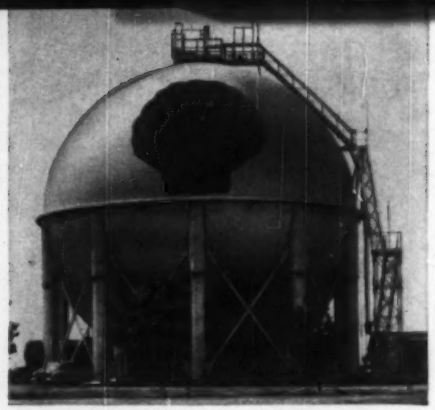
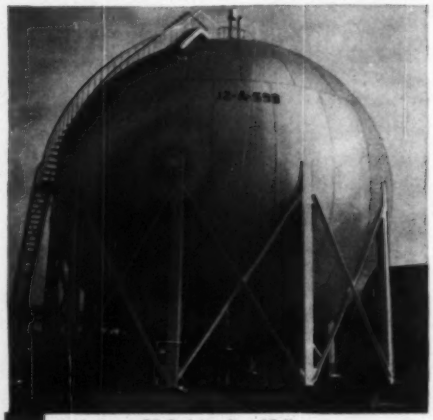
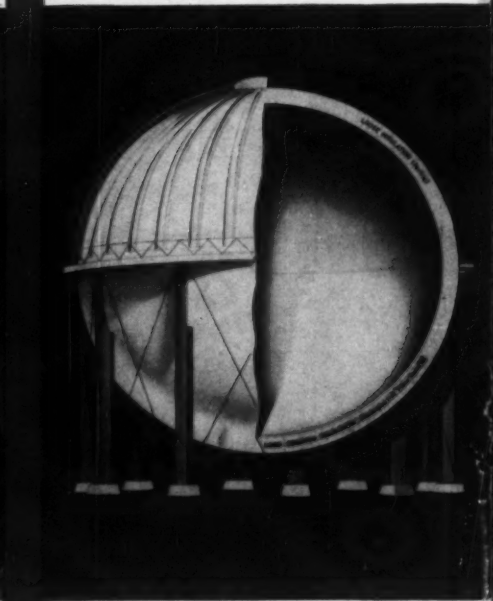


Ammonia. 64 ft dia, 55 lb working pressure



Isobutane. 50 ft 6 in. dia, 60 lb working pressure

Gasoline. Three 2500 bbl spheres, 30 ft dia, 20 lb working pressure



Liquefied chlorine. Cutaway view of insulated storage sphere

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Photo courtesy of Triangle Engineering Co., Oak Lawn, Ill.

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Gang Forming Licks "Y" Wall Problem

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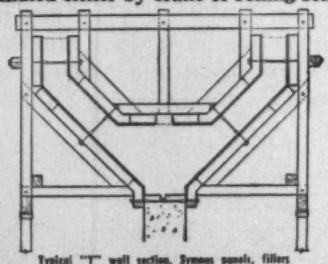
On the "Y" walls Symons standard panels, fillers, inside and outside bay corners, which were eight feet long, were ganged in 16-foot sections and handled either by crane or rolling scaf-



Typical "Y" wall section. Symons panels, fillers and bay corners were gang formed in sections.

folding. One 16-foot outside section was stripped, moved to the next wall section and reset by three men in 20 minutes.

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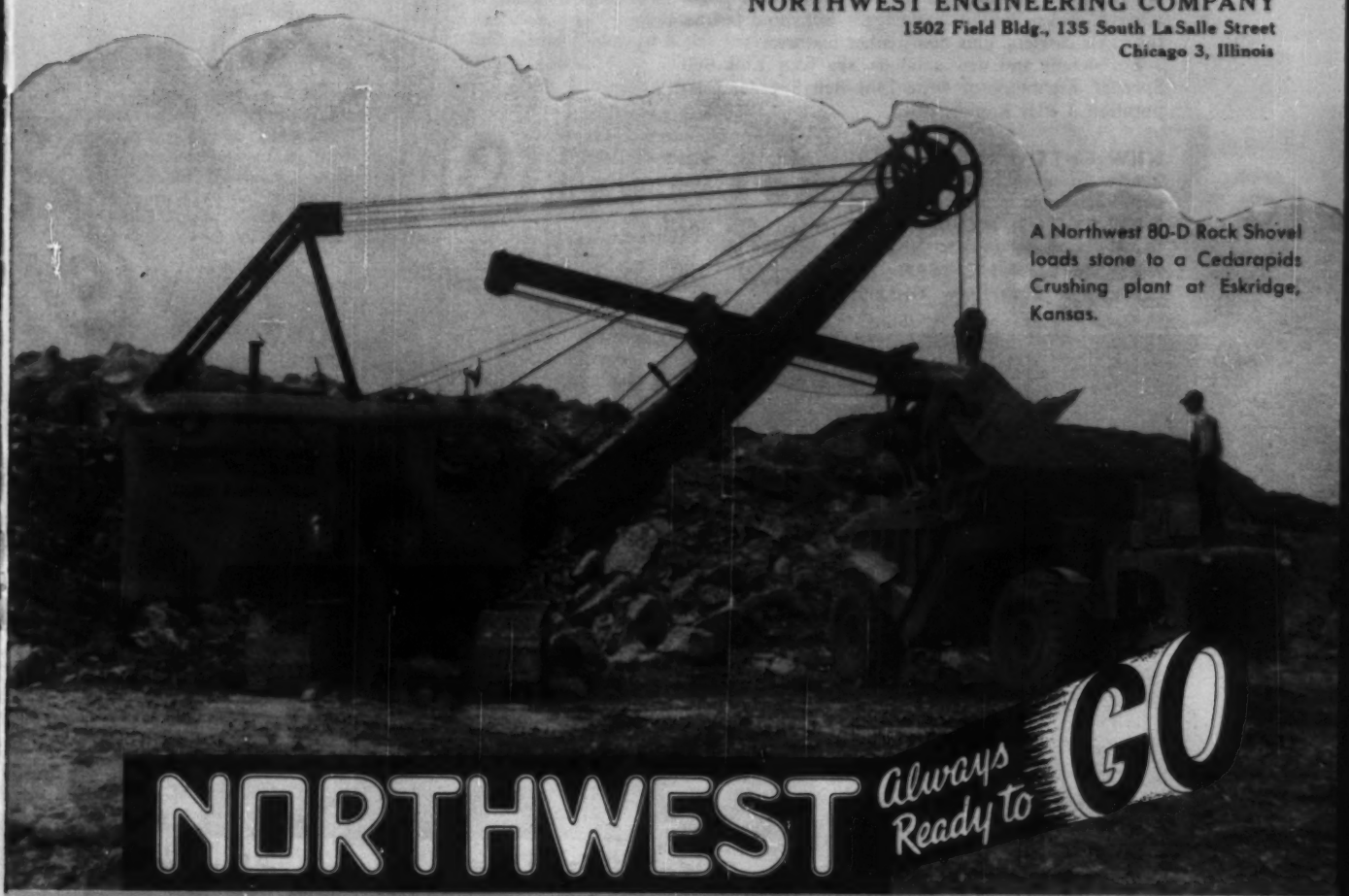

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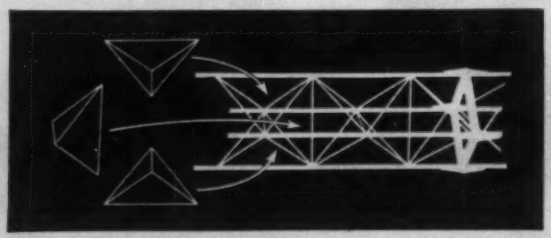
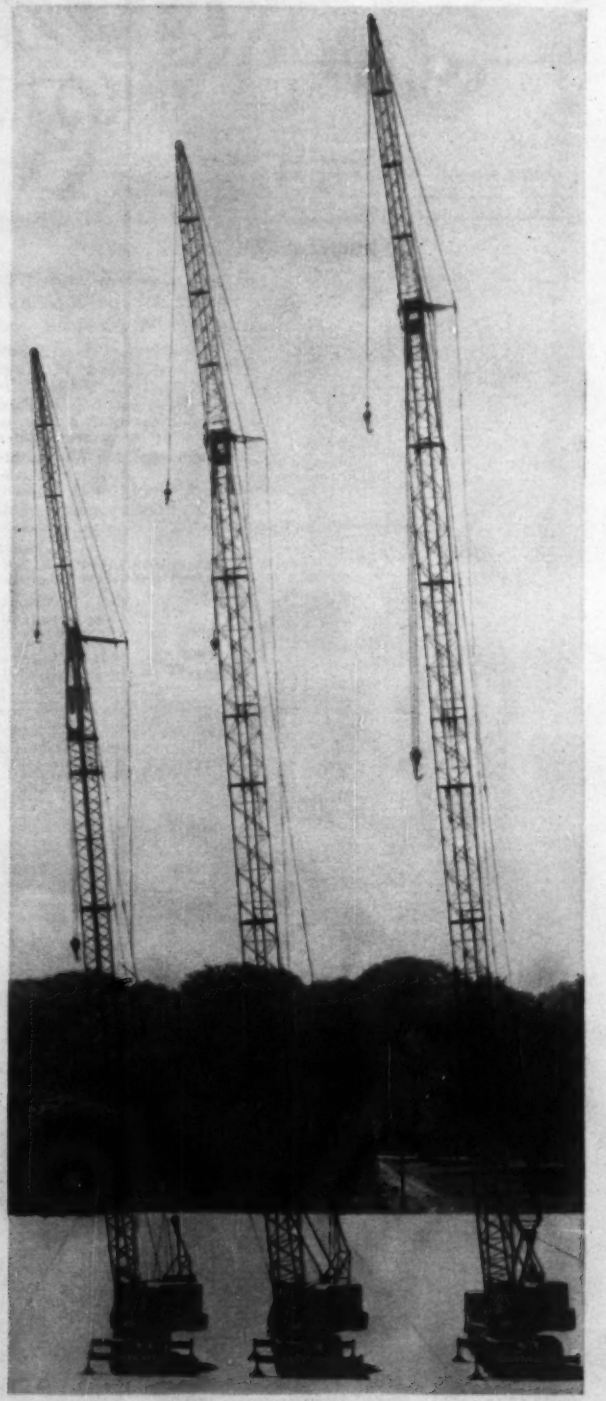


Revolutionary "HI-LITE" booms feature new tetrahedron design that virtually eliminates the whipping, twisting and deflection normally experienced with long booms. Sets of internal cross-braces meet at common points along the 44" square box section forming scores of tetrahedrons (pyramid-like structures) . . . provide maximum resistance to stress in every direction. High-strength steel tubing is lightweight . . . permits longer booms than previously possible.



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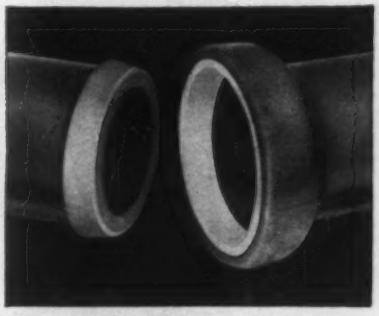

Engineering standard and specifications for sanitary sewers are written so that both the contractor and the community can obtain the best type of construction.

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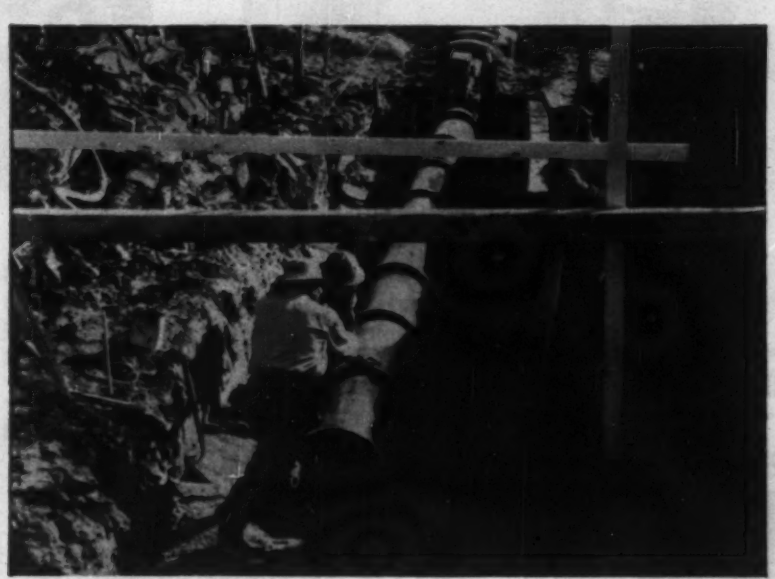

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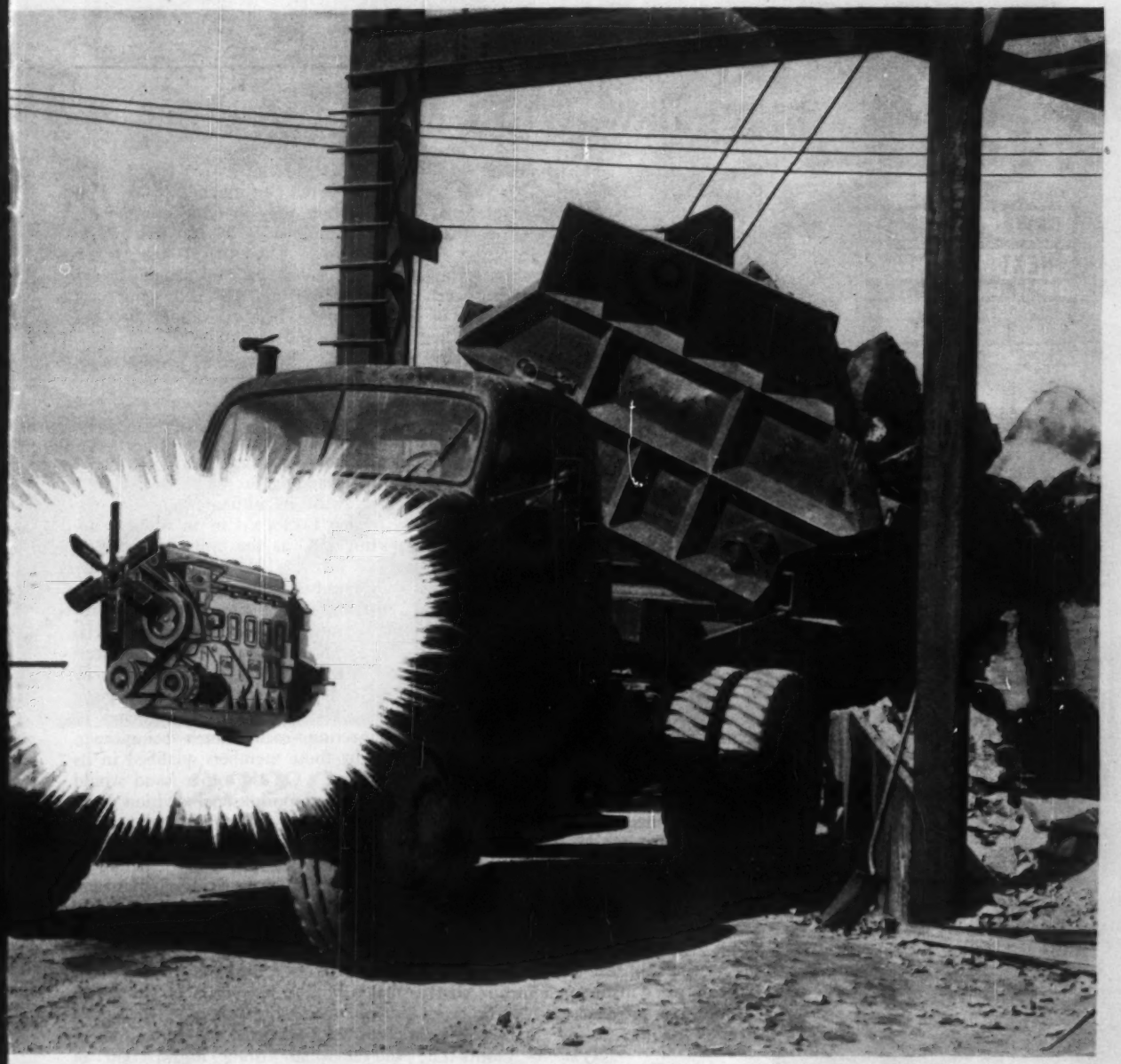

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Reader Comment

What Way to Unity?

Sir—The strong editorial (ENR Nov. 6, p. 152) under the title "No Way to Unity" appears to have been prepared under the stress of anger rather than calm deliberate thought.

Much of the inertia against trying for unity now through the Engineers Joint Council arises from the feeling of a large number of engineers that the over-all organization should be composed of individuals as members and not be merely a confederation of engineering societies. Perhaps it is possible to convert this inertia to orderly development of a unity organization that will fit all requirements.

The first central government in the U. S. was a loose confederation of the states under the Articles of Confederation. This resulted in a weak central government which could carry out its policies only through inducing the states to take a common stand. In a relatively few years this weak central organization was replaced by one, the essential of which was the delegation of limited powers directly from the people to the central government.

If a reasonably clear plan were in view for bringing about such a change in an orderly manner in the unity organization of engineers, a considerable body of objection might be dissipated.

EJC is too far removed from the members to pass on the policies and over-all operations of the engineering profession. It could represent the technical societies, but it belongs in the lower echelon of the organization chart. The top place in the organization chart belongs to a board selected by the over-all membership.

RAYMOND ARCHIBALD
Seattle, Wash.

Sir—The engineering profession certainly needs unification. The plan put forth by M. S. Coover, former president of the AIEE is a step in that direction (ENR Jul. 18, 1957, p. 23).

The decision of the National Society of Professional Engineers to extend an invitation to the major engineering societies to join with it on this plan can only be applauded.

I disagree completely with your editorial. I believe that EJC fell down on its job; it is about time a fine organization like the National Society of Professional Engineers has taken the initiative.

HEINZ P. KORETZKY
Harrisburg, Pa.

Sir—Your editorial "No Way to Unity" convinces me you are sadly lacking in information as to the true situation regarding professional matters relating to engineering. Therefore, I suggest you fully inform yourself as to all the related facts before writing on this subject again and thus avoid further disservice to the profession.

C. R. HANES
Depatrment of Highways
Columbus, Ohio

SIR—Your editorial regrettably will engender more conflict than cooperation, notwithstanding the fact that everyone agrees with its ultimate objective.

Mason Lockwood in an address supporting EJC as the unity organization (ENR Jul. 3, p. 21) envisioned the possible eventual development of a strong, central society of all engineers (perhaps the "American Engineering Association"). From the nature of engineering that organization would necessarily have a strong technical division serving the needs of the varied branches of engineering, each branch being operated by those members qualified in its discipline. On the other hand would be a strong professional division operated by those of professional stature. Between might be a division functioning through the active participation of those qualified in the fields of education, professional development and manpower utilization.

The history of our country demonstrates the fact, perhaps the necessity, that a limited federation of strong, divided organizations precede, through a preparatory period, the formation of the eventual strong organization of unity. This process serves the psychological needs of readjustment, relinquishment and acceptance. It serves also the organizational needs for the orderly transfer of functions and responsibilities.

Engineers Joint Council is the organ of confederation in being, created

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 300 W. 42nd St., New York 36, N. Y.

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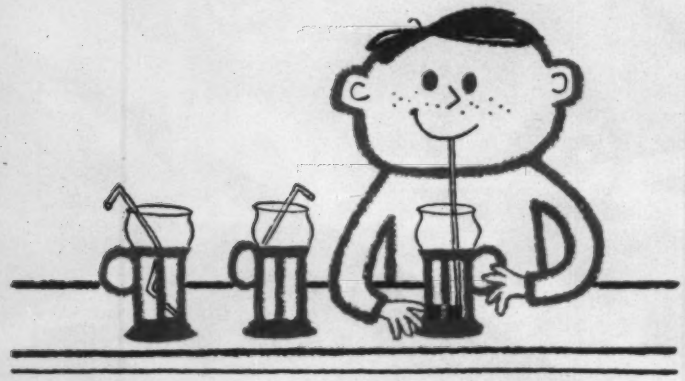

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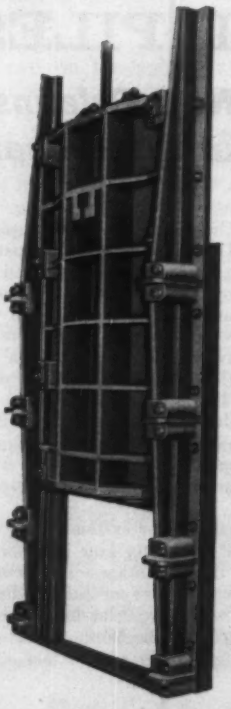

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through the cooperation of the founder societies. Surely, as now constituted or reorganized, it can be made to serve a gradual transfer of functions and responsibilities to those units which can handle them best during the period of transition.

The founder societies and perhaps others are eminently qualified to continue their major function of serving the needs for technical development and communication in their respective fields, unburdened of other responsibilities. Through concentration on a single purpose the National Society of Professional Engineers has established itself in the nation and in many states as the most dedicated and effective body in the field of professional needs, legislation, economic status, etc. It is a ready-made organization to which such functions can be gradually shifted in behalf of the engineering profession as a whole.

The Engineers' Council for Professional Development, American Society for Engineering Education and the Engineering Manpower Commission of Engineers Joint Council can take full responsibility for educational training and mobilizing functions, each in its own specialized phase of the problem, and serve as a nucleus for the expansion of functions in this field.

In the confederation, the founder societies have each maintained their individual qualification requirements for membership, and it is not likely that this would be affected by a change to a strong over-all organization. It is as logical that professional registration, the basic qualification for membership in NSPE, remain the prerequisite for participation in the professional functions in the transitional set-up and, perhaps, in the ultimate organization.

Surely there is room for the adjustments and concessions whereby an orderly progress toward a unified profession can be made.

GEORGE S. VINCENT
Bureau of Public Roads
Washington, D. C.

Rock By The Ton

SIR—I read about the extra award for riprap placing on Cherry Creek Dam, Denver, Colo., to Wunderlich Contracting Company (ENR Nov. 13, p. 29).

We have avoided the possibility of arguments on quantities of riprap placed by using the ton instead of the cubic yard as a unit of payment. The density of the rock to be used is set out in the specifications within rather narrow limits.

Inasmuch as the weights given by the

"Right" on the job!

My WORK BULL 202 RIG digs flush-with-the-wall excavations I used to have to do by hand!

Work Bull Fork Lift "spots" goods you're unloading right where it will be used . . . without double handling, and in a fraction of the time it takes by hand! Versatile attachments include standard 48" Tines, Materials Bucket, Block Tines, Side Shift, Angle Dozer, Bale Clamp, Load Clamp, Log Hook, and 20' Mast Extension!

"No more costly hours of hand digging for me! My Work Bull 202 Rig digs flush alongside walls and in other 'tight' locations inaccessible to any other machine! In addition, its full line of quick-change tractor and loader attachments let me get in more productive hours every day! Yes, I own the best... and I didn't pay a premium for it!"

Unitized Tractor, Loader, Backhoe! All three elements are engineered to go together! They perform with money-saving efficiency as a single co-ordinated unit. You get more reach, because the Loader's pump and mounting are built-in...no protruding front bumper. Davis Backhoe attaches directly to the Loader frame and uses the same hydraulic system. Continuous 200° operating arc lets you dig where other rigs can't reach! Backhoe detaches in five minutes, so you can quickly hook-up the M-F Scarifier-Scraper and other rear-end attachments to the 202's genuine Ferguson three-point hitch!

Quick and agile on the job-site! Powerful 40-hp, high-torque engine delivers more sure-footed lugging power than any other tractor in the utility class. Dual-range six-speed transmission, power steering, and individual turning brakes let you dart in, finish a job, and be quickly on your way!

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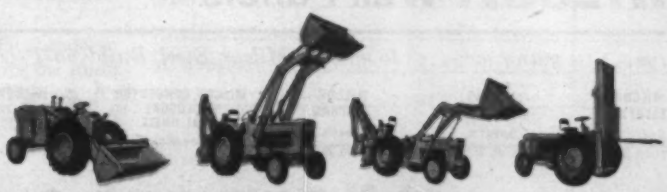

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W. F. HEATH
Engineer
International Boundry and Water Commission
Harlingen, Tex.

Arches Are Two-Hinged

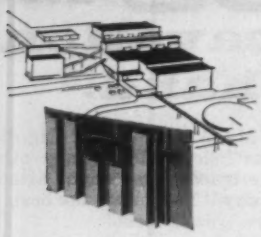
SIR—I should like to point out an error in your article, "Precast Arches for Gym Span 132 Ft" (ENR Sept. 18, p. 26). The ribs will act as two-hinged, not three-hinged, arches, since the plates attached to the 21WF142 beams at the crown sections of the two half arches will eventually be welded to the beams. The bolts are used for erection purposes only.

It seems to me that in reporting a project whose problems are structural in the main, not a small part of the credit should go to the engineer. The arches, as the rest of the building, were designed by S. W. Greenberg, consulting engineer, Philadelphia, Pa.

H. COORNVELT
Consulting Engineer
Philadelphia, Pa.

For Your Calendar . . .

Highway Research Board, Sheraton-Park, Washington, D. C., Jan. 5-9.
National Concrete Masonry Association, 1959 convention and biennial Concrete Industries, Exposition, Public Auditorium, Cleveland, Ohio, Jan. 12-15.
Building Research Institute, "Noise Control in Buildings," New Yorker Hotel, New York City, Jan. 14-15.
Canadian Construction Association, Queen Elizabeth, Montreal, Canada, Jan. 18-22.
National Association of Home Builders, Hotel Conrad Hilton, Chicago, Ill., Jan. 18-22.
American Road Builders Association, Dallas Memorial Auditorium, Dallas, Tex., Jan. 19-22.
Associated General Contractors of America, Inc., Hotel Americana, Miami Beach, Fla., Jan. 19-23.
Association of Asphalt Paving Technologists, Brown Palace, Denver, Colo., Jan. 26-28.
Associated Equipment Distributors, Hotel Conrad Hilton, Chicago, Ill., Jan. 26-29.
Society of Plastics Engineers, 15th annual technical conference, Hotel Commodore, New York City, Jan. 27-29.
American Society of Heating and Air Conditioning Engineers, Convention Hall, Philadelphia, Pa. Jan. 26-29.
National Crushed Stone Association, Americana Hotel, Miami Beach, Fla., Jan. 26-30.
National Bituminous Concrete Association, 4th annual meeting, Americana Hotel, Miami Beach, Fla., Feb. 2-6.
Mason Contractors Association of America, ninth annual convention and 1959 show, Chase-Park Plaza Hotels, St. Louis, Mo., Feb. 15-18.
National Ready Mixed Concrete Association, Roosevelt Hotel, New Orleans, La., Feb. 15-19.
American Society for Public Administration, Statler-Hilton, Washington, D. C. Mar. 16-18.
National Association of Corrosion Engineering, Hotel Sherman, Chicago, Ill., Mar. 16-20.



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They closed in the building fast, by using Milcor exterior wall panels. These were quickly fastened to sub-girts with self-sealing, self-tapping screws.

Construction costs stayed down. And so will maintenance costs—Milcor exterior panels are Bonderized, fortified against corrosion.

Milcor Wall Panels are available also as field-assembled, non-load-bearing sandwich walls comprising interior steel liner panels, insulation, and fluted exterior panels.

For convenient planning help, see Sweet's section 3b/In — or write for catalog 243 giving complete details.

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Sweet's, section 2a/In	Sweet's, section 2f/InL	Sweet's, section 2h/In	Sweet's, section 30h/In	Sweet's, section 12b/In

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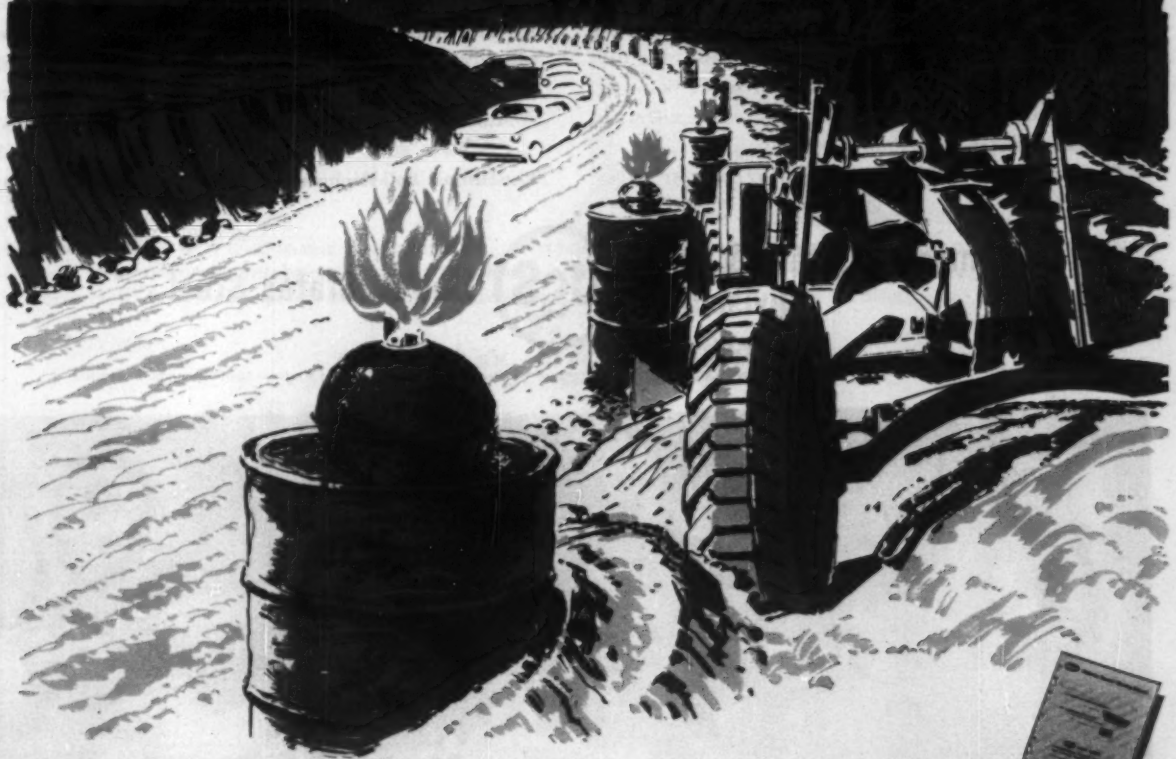

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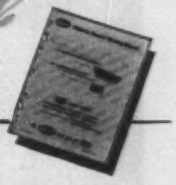

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The tiny cracks which may appear in concrete pavement are held together firmly by American Welded Wire Fabric, preventing the development of dangerous breaks in the riding surface. The next few years will bring a great increase in the traffic load our highway system will have to bear. More than ever before our roads will *require* the added 30% of extra strength American Welded Wire Fabric brings to concrete paving slabs.

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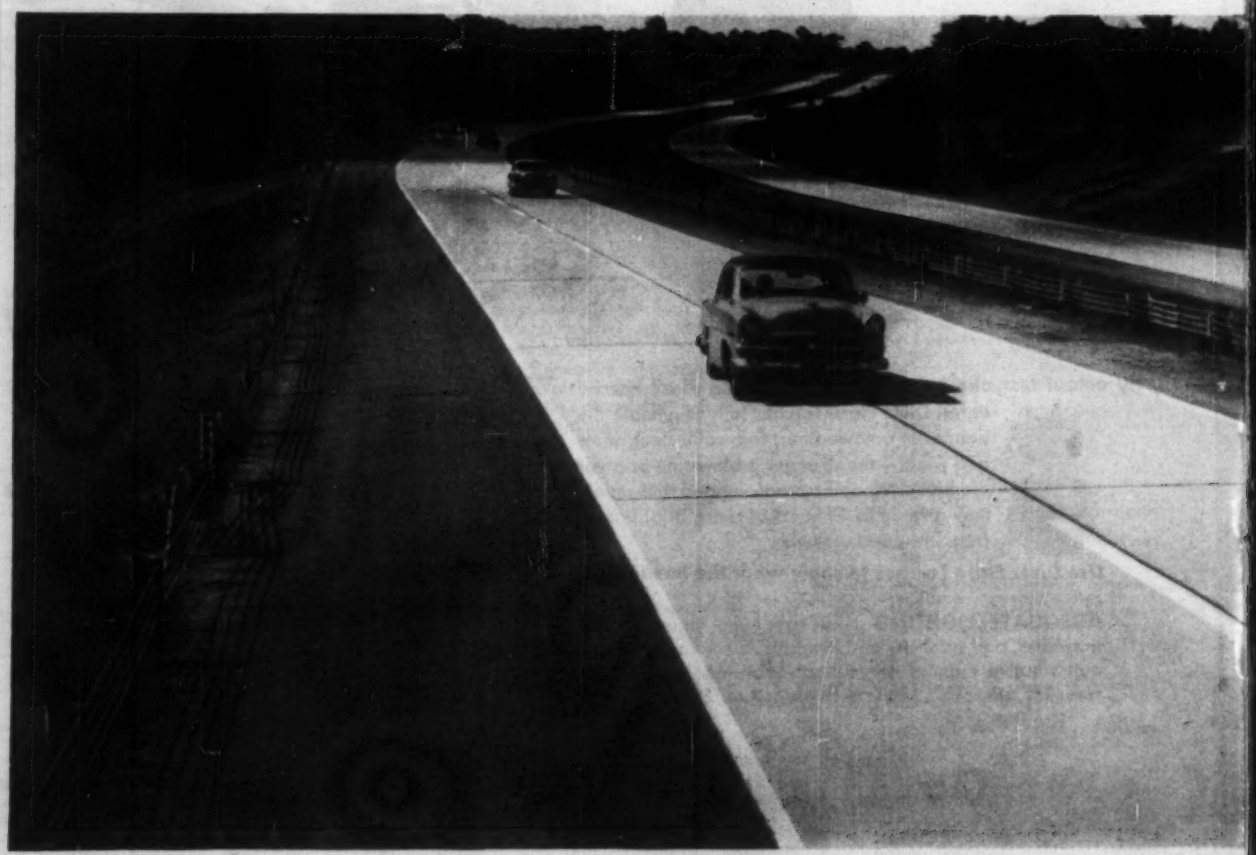

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and many other new superhighways are reinforced with American Welded Wire Fabric. Whether you are building a giant freeway or a city street, be sure to guarantee yourself the maximum in road life and the minimum in maintenance by reinforcing your pavement with American Welded Wire Fabric. For complete technical details, write to American Steel & Wire, 614 Superior Ave., N.W., Cleveland 13, Ohio.

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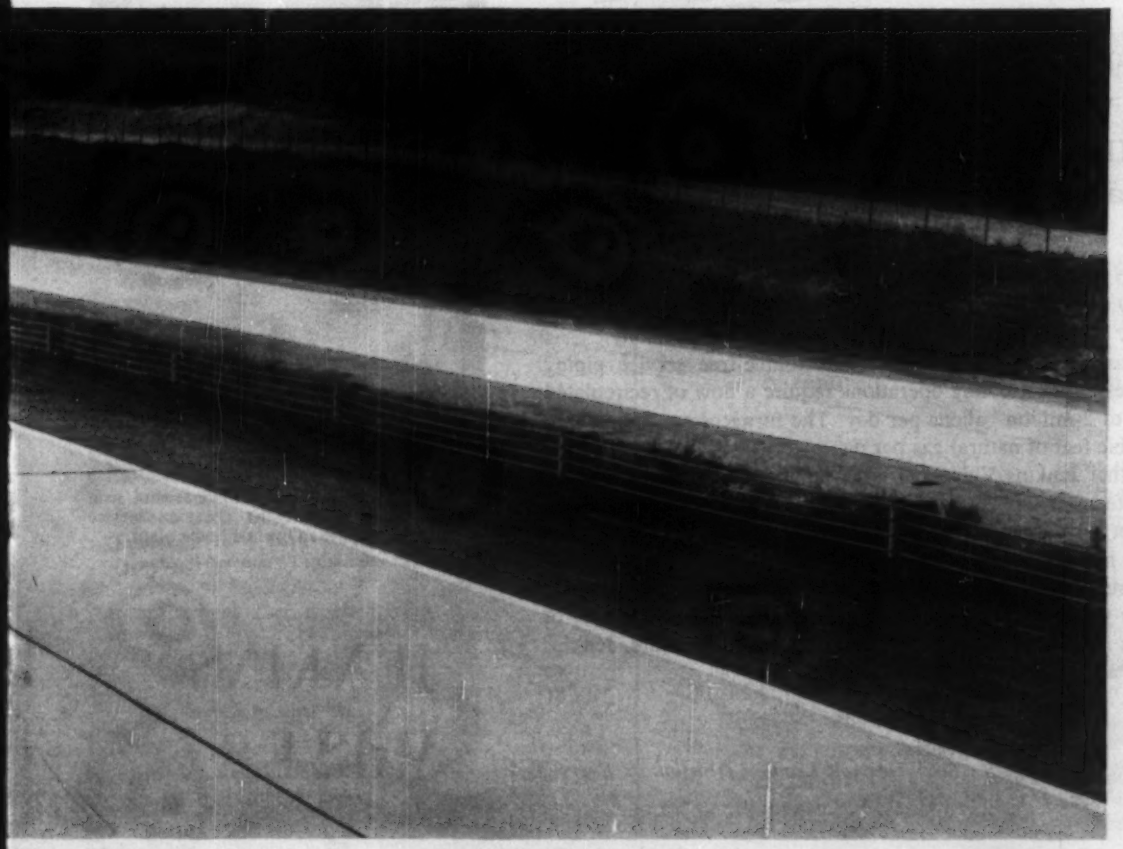

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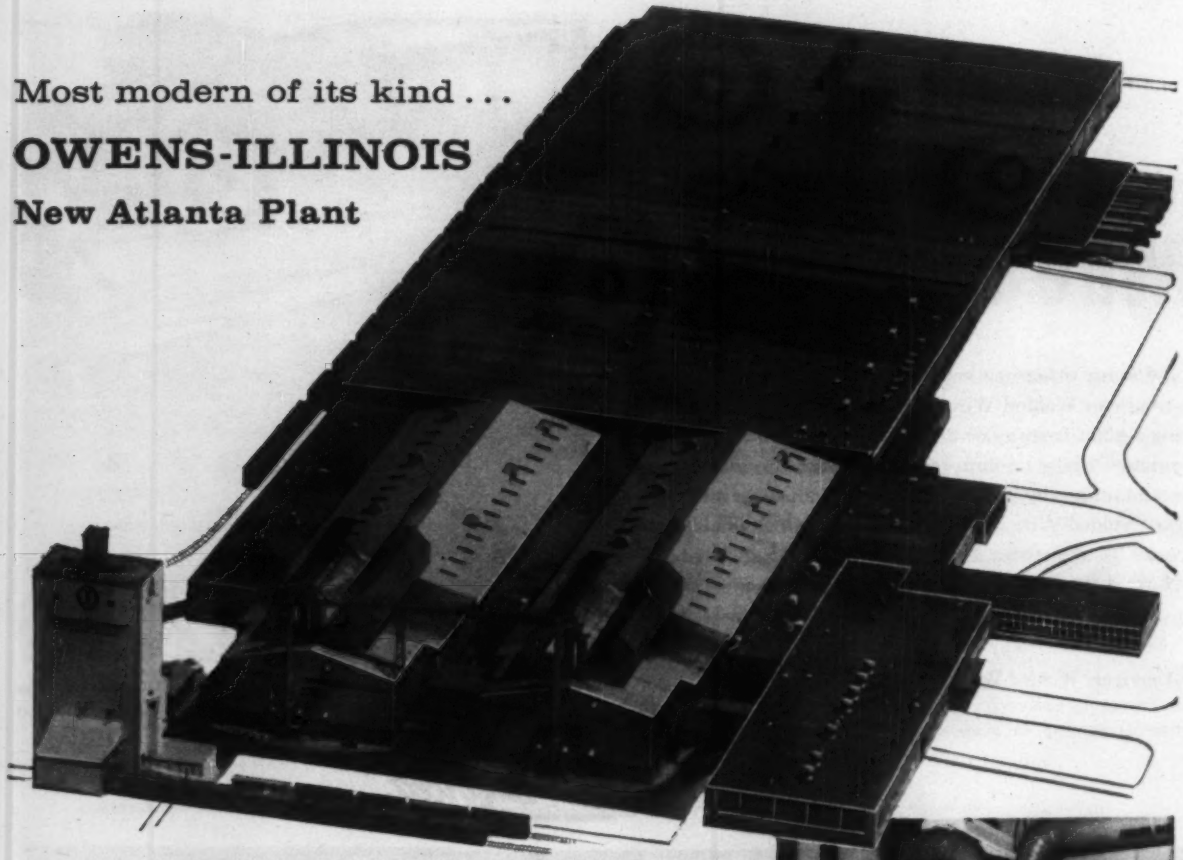

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JENKINS VALVES control important service lines

DESIGNED to be the most modern glass container plant in the world, covering 619,000 square feet and highly automated, this new Owens-Illinois plant can produce millions of glass containers annually.

In the glass manufacturing operations trouble-free service piping lines are an essential. Cooling operations require a flow of recirculated water equal to 2-million gallons per day. The furnaces consume about 3-million cubic feet of natural gas per day.

The fact that Jenkins Valves, in large numbers, are used to control water, gas, steam, compressed air and air conditioning lines in this new plant will not surprise most experienced architects, engineers and contractors. For nearly a century, "JENKINS" has been a common specification to assure maximum reliability.

It will pay you to have this important assurance when you specify or install valves . . . especially since Jenkins Valves cost no more. Jenkins Bros., 100 Park Avenue, New York 17.

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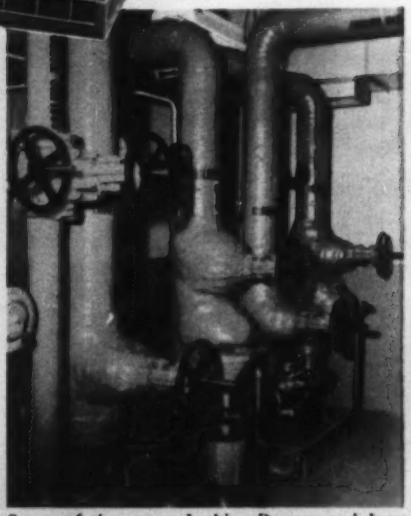

Some of the many Jenkins Bronze and Iron Valves which control the complex service piping system in the Owens-Illinois plant.

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LOOK FOR THE JENKINS DIAMOND

VALVES

ENGINEERING NEWS-RECORD

Vol. 161, No. 24 December 11, 1958

Number of copies printed this issue 83,553

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THE CONSTRUCTION WEEK

FLYING CRANE COMING—Construction men are about to get a new tool—a helicopter designed especially for construction operations. Manufacturer will be one of the nation's largest helicopter firms. A few contractors have already used cargo and passenger copters for isolated jobs.

GOOD INTENTIONS—New plant and equipment spending will rise in the first quarter of next year, according to the latest survey of business intentions made by the U.S. Department of Commerce and the Securities and Exchange Commission. Annual rate of spending for the quarter, seasonally adjusted, is expected to hit $30.5 billion. The last-quarter figure for 1958 is expected to be $29.9 billion. Low point for the recession, the July through September quarter of 1958, was an annual rate of $29.6 billion in new plant and equipment expenditures.

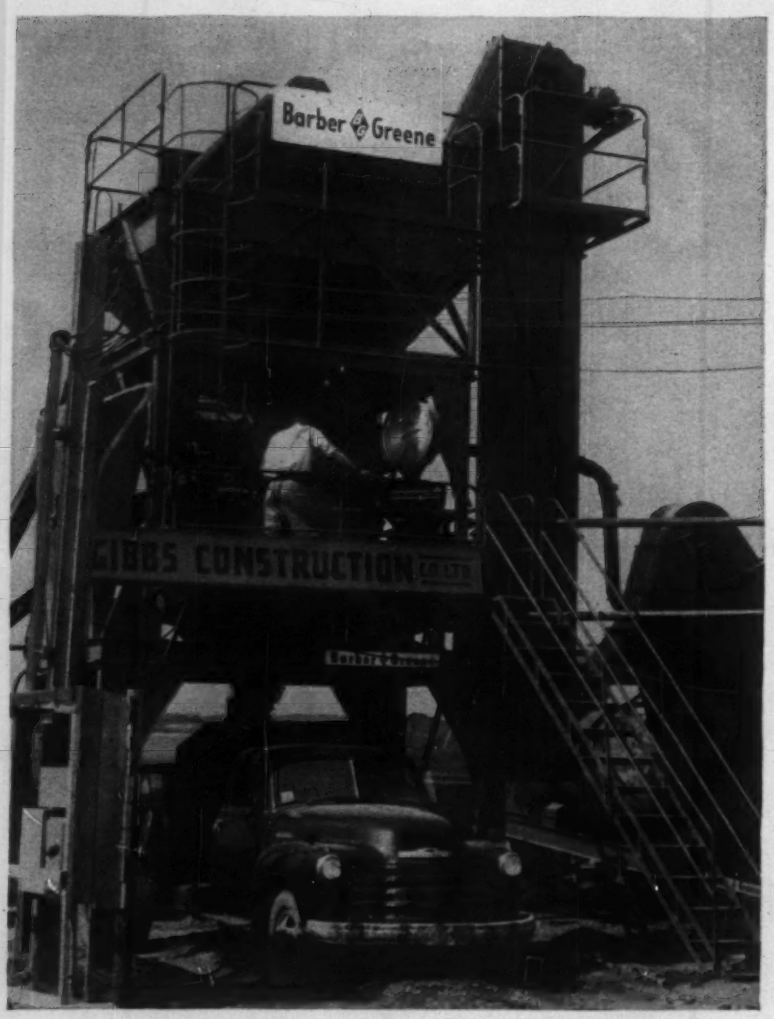
AN UNEASY PEACE—The smoldering jurisdictional conflict between AFL-CIO craft and industrial unions broke out last week in California, where the building trades unions endorsed a bolt from the AFL-CIO if necessary to protect their interests. Industrial unions are accused of usurping their work rights and restricting construction by contract (see page 116).

JURY BLAMES GAS FOR BLAST—Here's what a jury figures led to the explosion that did $5 million worth of building damage in Ottawa October 25 (ENR Oct. 30, p. 17): Gas entered a building through an uncapped service pipe. (A stoppage of flow in this pipe had occurred, but this was broken or weakened following the introduction of "drier" natural gas in January, 1958.) A watchman threw an electric switch in the basement. This touched off the explosion.

BIG SPENDER—California's Division of Architecture expects to begin construction on more than $147 million in state building projects next year. The work will call for 354 major general contracts and over 1,100 other contracts. This year's program amounted to $135 million; last year it was only $82 million.

WATCHFUL WAITING—U.S. firms with operations in Iraq are keeping a close eye on the Development Board there. Last week the board canceled development projects with British, Italian and Lebanese companies. Contractors here wonder if U.S. firms may be next on the board's list.

WHO CAN YOU TRUST?—Georgia investigators are looking into the disappearance of two bulldozers belonging to the state's Department of Corrections. The loss was discovered last week, but the machines were last seen in 1955. They had been used by roadbuilding convicts.



One of the new low-cost Barber-Greene Batch Plants in operation. Available in both 1000 and 1500 lb. sizes, these new plants include many years-ahead features.

two new low-cost Barber-Greene Batch Plants

with advanced big-plant features

Write for information on these two new profit-building batch plants.

Many advanced features in new low-cost batch plants

Incorporating job-proved advantages of the famous Barber-Greene Batch-Omatics, these two plants also have many new features, including:

- **New Batchometer Asphalt Metering System** automatically meters preset quantity of asphalt to pugmill for each batch.
- **Dyna-Mix Pugmill** for faster mixing, more uniform coating . . . long life, easy maintenance.
- **Quick, Easy Erection** with three-unit design: screen and bin section; weigh-hopper and pugmill section; base section. Tapered pins guide sections into place . . . automatically align all bolt holes.
- **3½ Deck Vibrating Screen,** with 40 sq. ft. of area, gives top capacity for each plant and for the full range of asphalt mixes . . . integral part of bin section for easier erection. Four bins are standard—not extra.
- **Optional Hydraulic Controls** for easier operation . . . relieve operator of manual exertion; easily converted in the field.
- **Hydraulically Operated Pugmill Discharge Gate** provides instant discharge of mix . . . eliminates segregation. No time wasted between batches.
- **Other Advantages Include:** easier maintenance; complete line of accessories, including fines system; combined overflow chutes; scavenger dust system.

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WASHINGTON OBSERVER

- **Congress will look into recession causes**
- **Two million housing starts needed?**
- **Builders may get FHA loans on land**

- **Construction's role in keeping the economy growing will be spotlighted at Congressional hearings next month.** The Democrats will dig into the whys and wherefores of the recession—with particular emphasis on policies needed to keep business activity expanding from here on out.

  Some observers fear the business recovery is so sluggish that we could be vulnerable to another decline even though most of the indicators point upward.

  Sharpest attack will come on the rise in interest rates, which tends to hold back construction and general business spending. The Senate Finance Committee, sparked by New Deal Sen. Robert Kerr (D., Okla.) is resuming the hearings it held last spring. The starting points are the sharp decline in government bond prices and the increased interest being paid by the government in recent months. Senator Kerr favors supporting the price of government bonds—which tends to be inflationary by pumping lendable dollars into the banking system.

—

- **Details of the Democrats' plans for housing show they want to keep this part of construction going strong.** The omnibus bill that Sen. John Sparkman (D., Ala.) wants to push through early next year will liberalize Federal Housing Administration insurance authority.

  Senator Sparkman's bill would include: new billions in FHA insurance authority; new maximums on mortgage amounts so FHA can insure up to $27,500 on a one-family house, compared to $20,000 now; boosting the VA maximum mortgage insurance to $20,000—up from $17,000; making $1 billion available for slum clearance over a two-year period; adding $400 million to loan funds for college housing.

  With this kind of measure passed, Senator Sparkman will begin his investigation of how to provide funds for two million starts per year. That's what he says the country will need by the mid-1960s. He intends to conduct a thorough, top-to-bottom analysis of the whole government effort in housing —an exhaustive survey of what the real long-term problems are, and what should be done about them.

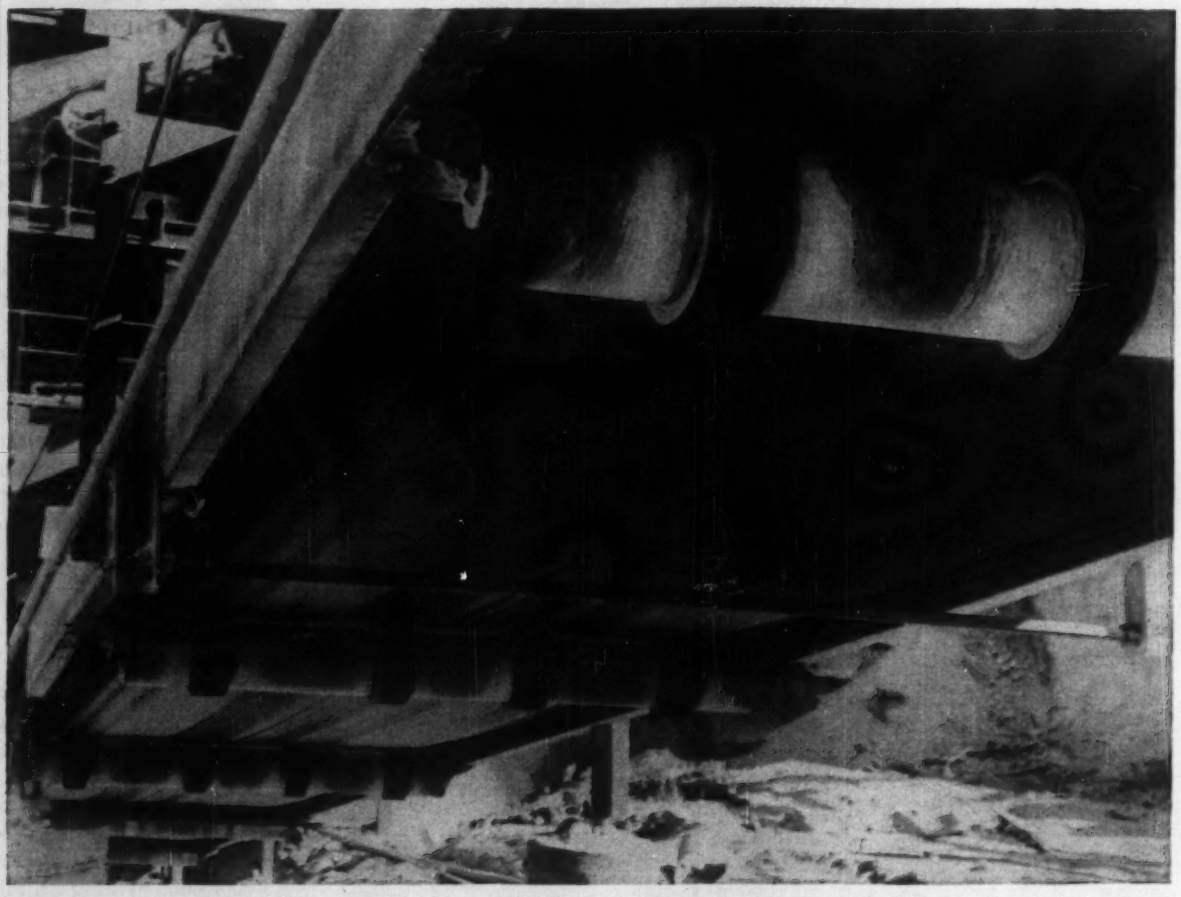
—

- **Federal Housing Administration wants to ask Congress for brand new legislation to help homebuilders develop raw land.**

  The idea is to make loan insurance available for the purchase and development of land that meets the growing need for residential building sites. Experts note the disappearance of easy-to-come-by acreage around our cities. There's also talk of demand during the years ahead that could boost starts to as high as 2 million a year.

  Shortage of already-developed land puts small and medium-size builders in a real financial box, say the loan program's proponents. They find it hard to come by the money it takes to put in water, sewerage and other expensive facilities needed before a foundation can be placed.

US RUBBER SEARLE SLEEVES



"U. S." Searle Sleeves help roll up 4,000 tons an hour

To build a causeway, the contractor planned on excavating and placing over a million yards of fill a month by conveyor belt.

Trouble began when mud and sand built up to an almost concrete-hard finish on the return idlers. This accelerated cover wear, caused the belt to wander, also caused excessive belt stress—all of which would result in premature failure. Then a "U. S." Belting Engineer suggested patented U. S. Rubber Searle Sleeves on the return idlers. Over six hundred of these specially designed rubber sleeves were cemented to the 6"-diameter idlers. Build-up of mud and sand ceased and wandering of belt stopped. The sleeves gave fine performance, needed no maintenance, and moved 4,000 tons an hour.

• • •

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Road Cash Low, Ideas Blooming

If things don't change, the interstate highway program will go into 1961 without money in the till, say highway officials.

But Congressmen say things will change, it's just a question of how to raise the money.

These fears and reassurances highlighted the 44th annual meeting of the American Association of State Highway Officials in San Francisco last week.

• **Why the shortage?**—Funds are short because revenue-producing measures established in 1956, when the program was authorized, were based on an estimate of $27 billion for the 38,500-mile superhighway system. Now the estimate is $40 billion.

Here are some reasons for the dramatic jump in estimated cost:

• Higher standards in many places than anticipated in the 1956 estimate.

• A 12% to 15% increase in construction costs.

• Careless estimates by some states in gathering data two years ago.

Because of the increased estimate, Congress, for fiscal years 1959 and 1960, specifically waived a provision of the 1956 act. The provision limited apportionments to money available.

Since there's a surplus in the trust fund—about $800 million as of November 1—it appears the fund will not be exhausted until fiscal 1961.

But then, with the waived limitation back in effect, experts see no money available for allocations that year. And allocations in subsequent years would have to be reduced.

The trust fund is built entirely from a proportion of federal highway user taxes (see table).

• **How to get more money**—Neither officials in Washington nor Congressmen who addressed the AASHO meeting suggested slowing the interstate program. Their emphasis was on ways and means of beefing up the trust fund. Possible financing methods fall into four categories:

• Deficit spending, notes of indebtedness.

• Earmarking even more of the user tax money to the fund.

• Boosting gasoline taxes.

• Spreading new taxes across the board.

Top Congressional roads committee leaders at the meeting all opposed reducing the interstate effort. They are apparently determined to find ways of meeting the money needs.

Sen. Francis Case of South Dakota, ranking Republican member of the Senate Subcommittee on Roads, suggested selling a windshield sticker stamp as a highway use fee. He estimates that such stamps, starting at $5 for passenger cars, could raise from $350 million to $900 million per year, depending on the price of the stamps required for trucks and busses.

This amount, he says, would probably liquidate any shortage in the trust fund.

Senator Case also advocates a special bond issue. The bonds would be retired by extending the time for existing trust fund levies. Although it would add to the national debt, this plan does have a specific program for retiring that increased debt.

Senator Case rules out use of general funds. This proposal, he says, would meet violent opposition in Congress. Nor is he enthusiastic about an increase in the federal gas tax.

Strongly opposed to higher gas taxes is outgoing AASHO president Claude R. McMillan. Car owners, he says, "are now paying more than their share of taxes."

What U.S. Taxes Go Into Highway Trust Fund?

ALL OF THESE . . .	Total Collected (in thousands)
3¢ per gal on gasoline	$1,649,226
3¢ per gal on diesel fuel	46,354
8¢ per lb on tires,[1] 9¢ per lb on tubes	255,388
$1.50 per 1,000 lb tax on heavy trucks[2]	34,085
HALF OF THIS ONE . . .	
10% excise on trucks, buses, trailers	194,595
AND NONE OF THESE . . .	
10% excise on autos	1,062,557
6¢ per gal on lube oil	70,644
8% on parts, accessories	165,009

THEY ADD UP TO . . .

. . . $2.08 billion that has gone into the trust fund out of $3.5 billion collected in the 12 months ending September 30.

[1] Highway type only; excludes construction and farm machine tires. Tax on camelback for retreading highway tires 3¢ per lb.

[2] Annual tax on trucks weighing over 26,000 lb.

"Furthermore," he adds, "we must face up to the possibility, be it ever so remote, that the federal-state motor fuel tax combination may be approaching the point of diminishing returns."

In his presidential address, Mr. McMillan suggested, instead, special excise taxes on tires, trucks and buses. He also wants other user taxes, not already committed to the fund, to be placed in it.

If this does not raise enough money, Mr. McMillan says, the deficit should be met from general funds or from sale of bonds.

Rep. George H. Fallon (D., Md.), co-author of the act establishing the interstate program, told the meeting that failure to find the funds would be tragic; tragic for the highway industry, which has tooled up to meet the demand; tragic for the states; and tragic for the whole U. S. economy.

Congressman Fallon, who is chairman of the House Subcommittee on Roads, made no specific financing recommendations.

The most outspoken opponent of a work-stretchout was Sen. Albert S. Gore, chairman of the Senate Subcommittee on Roads.

The Tennessee Democrat questioned the accuracy of the new state estimates that increased the program's costs. Senator Gore had first raised these criticisms last summer in Senate hearings.

But, he says, while estimates may not be the best way to determine costs, he can think of no alternative.

Rep. Gordon J. Scherer (R., Ohio), ranking minority member of the House roads subcommittee, described the needs formula as the key to the success of the interstate program. He urged AASHO to fight for continued allocations on this basis.

• **So far, on schedule**—The interstate program is apparently on schedule.

Fund obligations so far have amounted to 107% of national goals. Most of the 1,700 miles of completed highway are in use. And present construction obligations total $2.25 billion.

Eight states are ahead of scheduled rate of fund obligation; eight states are behind. The rest are on schedule.

Twelve states are having trouble matching the increased program. But not all of these necessarily need new highway user taxes.

(Continued on page 22)

Much of the trouble comes in the form of diversions from highway user funds. One state, for example, is using these taxes to help finance school construction.

Bertram D. Tallamy, Federal Highway Administrator, told the meeting that the states had completely obligated the extra $400 million voted by Congress for ABC roads as a counter-recession measure.

This special program is financed two-thirds by federal money and one-third by the states, bringing the total budget to $600 million. This is buying 11,000 miles of highways and more than 1,000 bridges.

• **Outdoor advertising**—Almost every state will need new legislation on billboards if it is to take advantage of the federal bonus. Strong opposition from outdoor advertising interests will make it difficult for many to meet the 1961 deadline.

The bonus, passed by Congress this year, is in the form of an additional ½% of the total construction cost on that part of the interstate system within a state. To get it, the states must regulate billboards in accordance with a complex set of standards promulgated last month by the Bureau of Public Roads.

• **AASHO test road**—Traffic started to move on the $22 million AASHO test road on October 15, the members learned. Results will be available in 1961. The test period is two years, and time for analysis will be needed.

• **New officers**—Ralph H. Bartelsmeyer, chief highway engineer of Illinois, is AASHO's new president (see p. 81).

Other new officers:

First vice president, David H. Stephens, chairman of Maine's state highway commission.

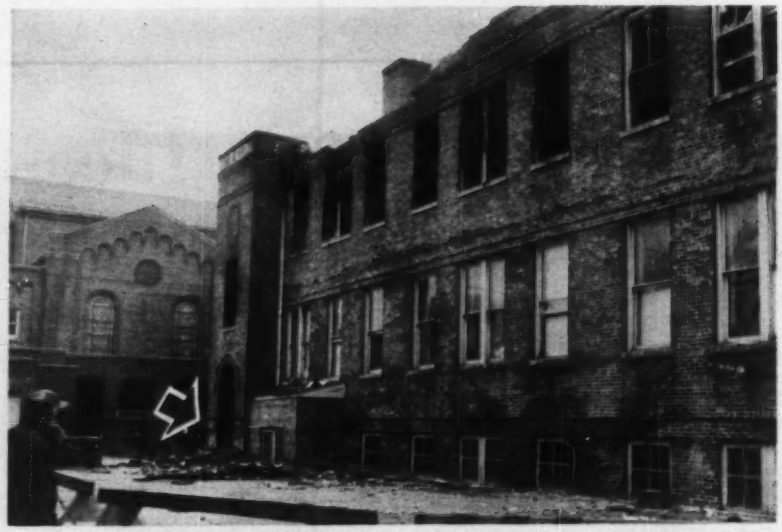
Regional vice presidents: J. N. Robertson, director of highways for the District of Columbia; R. B. Richardson, director of the department of highways of Louisiana; John C. Mackie, commissioner of Michigan's state highway department; William E. Willey, state highway engineer of Arizona.

The Thomas H. MacDonald Award was presented to George T. McCoy, California's state highway engineer.

Mr. McCoy was cited for his "long and consistent participation in national highway movements and his years of service" to California.

The award, for high achievement in development of highways, was established in 1957 in honor of the late Thomas H. MacDonald, who headed the U. S. Bureau of Public Roads for 34 years.

The 1959 AASHO meeting will be held in Boston.



Fire started in basement below stairwell (arrow), shot up to second floor.

Chicago Fire Stirs Safety Plans

Accumulated rubbish. Fire. A stairwell acting as a flue. Wooden stairs. Open corridor. No sprinklers. And 92 dead.

That's the story of the fire at Chicago's Our Lady of the Angels School last week in which 89 children and three nuns perished.

A stairwell apparently acted as a flue for a fire that started in the basement—cause unknown. Best guess is it originated in an accumulation of paper and rubbish under the stairs leading to the first and second floors.

The flames climbed up the wooden stairs to the first floor, where they were blocked by a pair of steel doors to the first floor corridor. Then they shot up to the second floor to find an open archway to the corridor.

The fire may hold special meaning for the construction industry. In cities throughout the country officials are now re-examining their own schools, asking themselves: "Could it happen here?" (see editorial p. 128).

In Chicago, a 15-man coroner's jury is holding a full-dress inquest this week.

Here are some of the facts they are examining.

The building is U-shaped. The stairs that burned were in the rear, at the outside of one bend in the U. There is a fire escape outside the bottom of the U.

The other side of the U—the south wing—was relatively undamaged.

Each of the two wings has three stairwells, two at the front and one at the rear, and none is protected by so-called fire doors.

The stairways are of ordinary timber frame construction. Partitions are timber framed with lath and plastering and the roof is ordinary tar paper and gravel on timber rafters and purlins.

Exterior walls are load-bearing with brick construction chiefly, although there appears to be some concrete construction. The building is not protected by a sprinkler system.

About 1,200 pupils were in the school on December 1 when the fire broke out.

One of the mysteries is that the smoke that poured up the ill-starred northeast stairwell so quickly was "oil type"—dense and black. Burning linoleum could have been the cause.

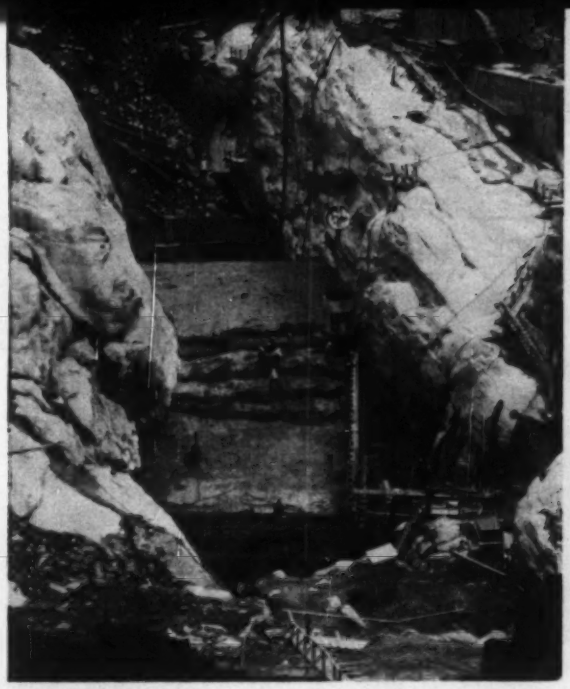
There was no explosion when the fire started. Some evidence indicates the fire may have been smoldering for some time before being noticed.

Another point hard to understand is how the smoke and fire spread so rapidly upward, along the corridors and into the classrooms on the second floor. The fire's speed apparently panicked many children into immobility. Many fatalities were caused by suffocation or inhalation of the super-heated fumes.

Each wing is about 60 ft wide and 120 ft long and contains eight classrooms on each floor. The classrooms are high-ceilinged and have considerable wood trim. Most of the fire damage, or at least the worst of the damage, is in the northeast corner of the north wing, where the fire started, and along the north side of this wing. The stairs in the northwing stairwells are burned and badly charred.

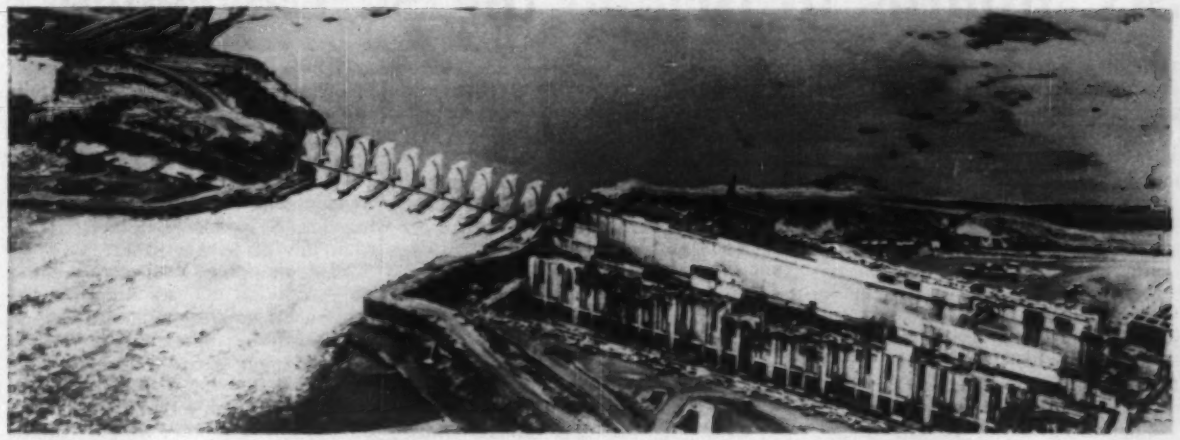
The structure was built in 1910 and remodeled in 1951. It passed a regular inspection by city officials in October.

This stairwell, about 15 ft wide and 25 ft long, has six flights of stairs.



GORGE HIGH DAM got another setback when a recent . . .

. . . **LANDSLIDE** buried the foundations.



PRIEST RAPIDS DAM is another story. Same contractor is steaming along fourteen months ahead of schedule.

Sweet and Sour Is the Contractor's Lot

It isn't enough that "ice-barrier" troubles long ago wrecked the original construction schedule for Gorge High Dam, on Washington State's Skagit River. Now comes a landslide that takes the contractor a week to dig out from under.

The slide followed 12 days of heavy rain. Earth covered parts of the foundations to a depth of 14 ft. Fortunately the slide occurred at night when nobody was in the way.

Last year, the $15 million job went so sour for everybody concerned that Merritt-Chapman & Scott and the Seattle Power & Light Co.—contractor and owner, respectively—were ready to part company (ENR Mar. 7, 1957, p. 28).

A big bone of contention was the owner's plan to sink "freezing points" and create an ice cofferdam to block groundwater seepage.

After things simmered down, Merritt-Chapman & Scott applied for an 837-day extension. The request is still under consideration (ENR Sept. 11, 1958, p. 17).

The Priest Rapids job, on the Columbia River in Washington, is something else again. Here MC&S is close to 60% complete and 14 months ahead of schedule on its $92 million contract. As a happy consequence, MC&S stands a good chance of picking up a $4 million bonus.

Priest Rapids got off to a good start. When it was let in July, 1956, it was the biggest single contract ever awarded in competitive bidding. (MC&S broke its own record later by taking the Glen Canyon Dam job for $108 million.) By November, 1957, the job was a year and a half ahead of schedule.

How do you get so far ahead? Lots of equipment, overtime and good weather, plus good management, says one MC&S man.

Harza Engineering Co., Chicago, designed and is supervising the Priest Rapids project.

This new link between U.S. and Canada replaced a span that was too low for big ships. It took only . . .

Six Months to Bridge the St. Lawrence

Builders of a new, $7 million suspension bridge across the St. Lawrence think they may have set a speed record.

Traffic between the New York shore and Canada's Cornwall Island began moving across the bridge last week—only six months after the American Bridge Division of U. S. Steel started work. The bridge crosses the river's south channel.

A. B. Drilling, who finished up the Mackinac Bridge last winter, was erection superintendent on the job.

The bridge is 3,480 ft long with a 1,800-ft suspension section. Its 900-ft center span clears the river by 120 ft.

Channel clearance is this bridge's reason for being. It replaces a low-level crossing that would have interfered with Seaway shipping (photo right).

The old south channel bridge of the Roosevelt International Bridge came out last spring and temporary ferries served auto traffic to Canada until last week. Shipping has used the channel since last July 4.

The suspension bridge was not in original Seaway and Power Project plans for the St. Lawrence. A low-level movable bridge was to have been built at one of the new locks, to carry both rail and auto traffic.

But when the New York Central abandoned its rail line, a high-level crossing became practical. The change in plan had been challenged as causing possible delays in opening the south channel to shipping (ENR Aug. 2, 1956, p. 22). But the ferries, which replaced the old crossing last summer, let shipping pass under the new structure as it was erected.

Erectors placed the first piece of suspension bridge steel last May 14, and proceeded to do the job without a lost-time accident—100 men working. Over 3,400 tons of structural steel and 454 tons of wire rope went into place. The Corps of Engineers' Col. Loren W. Olmstead, Buffalo District Engineer, called it an "outstanding pre-planning demonstration."

The 215-ft-high bridge towers were erected in 21 working days. Cable installation took from June 30 to July 12. Each cable is made up of 19 lengths of 2¼-in-dia, 97-wire, galvanized bridge strand. The strands were spun at American Steel and Wire's Trenton Works; no cable-spinning was done at the job. Straight strands were laid parallel and banded together by the erectors, then hung and wrapped. Finished main cable diameter is 11½ in.

High strength bolts—87,541 of them—were used to fasten steel members together. Suspended-span erection took from July 22 to August 12.

Cable-wrapping finished November 14—exactly six months after first suspension bridge steel went up. And in the meantime, approach spans for the two-lane toll bridge to Canada has been completed.

This is truly an international bridge. Canada's St. Lawrence Seaway Authority handled construction of its substructure; the U. S. Corps of Engineers

This bridge came out. It was temporarily replaced by ferries.

handle superstructure construction for the St. Lawrence Seaway Development Corp. The late P. L. Pratley of Montreal designed foundations, and D. B. Steinman of New York City designed the suspension structure. McNamara Construction Company of Toronto and American Bridge Division of U. S. Steel were the respective contractors.

Canada has announced that a new bridge will be built beyond this one, across the St. Lawrence River's north channel between Cornwall Island and Cornwall (background in picture). Presumably, this, too, would be a high-level structure, since a second shipping channel on the Canadian side of the international power project is planned.

Swords or Plowshares?

Russian maneuvers at Geneva talks and Congressional doubters are stalling American plans to use atomic bombs for construction projects

The vision of using an atomic bomb to blast a harbor in icebound Alaska is being dimmed by the Russians at Geneva, Switzerland—and by doubting Thomases within the U. S.

U. S. government officials and civil and nuclear engineers know this feat and others are possible, in theory and in practice. Military tests have given ample evidence that atomic explosions can be harnessed for peaceful uses (see editorial, p. 128).

The U. S. Atomic Energy Commission has been excited about peaceful bomb use for some time. It established Project Plowshare, a program of underground A-blasts, for research in peaceful applications in excavation, mining and energy storage.

But the Joint Congressional Committee on Atomic Energy, at least up to now, doesn't share AEC's enthusiasm. Key committee figures regard the project as "blue sky stuff" and think serious work can safely be put off. And some experts in the industries that stand to gain the most (like mining and construction) from the "peaceful" bomb feel the same way.

In any event, the U. S. is stymied so long as the Soviet-Great Britain-United States negotiations are going on in Geneva over how to police and ban military testing.

The reason: The Soviets won't believe our declarations that testing of a bomb for excavation, power production or shaking loose minerals and oil sands are peacefully intended. Rather, the Russians charge the whole fabric is a facade to shield further weapons testing.

Until we can get acceptance diplomatically, the AEC is thwarted in its peaceful testing program.

If the Geneva talks collapse, Administration officials have hinted the U. S. will feel free to end its one-year test ban and resume testing of weapons and peaceful bombs.

Until and unless this happens:

- A projected test shot to carve out a harbor in northwestern Alaska, tentatively scheduled for 1960, probably won't come off on schedule. It may even be abandoned.
- An underground explosion in New Mexico to see whether energy for electricity can be harnessed by this means will be delayed beyond the original target date next spring.

An underground shot planned for next year in a salt bed area south of Carlsbad, N. M., is another victim of the diplomatic impasse with the Soviets. It would have tested both power potential and isotope production.

Plowshare was born after Shot Rainier more than a year ago. At that time, a 1.7 kiloton atomic bomb—exploded 900 ft beneath a Nevada mesa to see if radioactive fallout could be contained—secondarily opened up the whole vista of industrial utilization.

Project Plowshare was set up under the direction of the University of California Radiation Laboratory at Livermore (ENR Mar. 6, p. 31).

The Livermore laboratory already has come up with an impressive body of data on what can be expected from an underground atom blast.

In a technical paper prepared for the Geneva "Atoms for Peace" conference this fall, Gerald W. Johnson of Livermore and Harold Brown of AEC make this point:

Huge nuclear excavations apparently can be made more cheaply with nuclear than with conventional explosives.

And they offered the most comprehensive data thus far on what could be expected from such a project.

They say the amount of earth removed by an underground nuclear explosive depends upon the depth of burial, hardness of the medium and whether the explosion occurs in a wet or dry medium.

The experts offer these conclusions:

- Crater dimensions increase rapidly with depth of burial. For example, a 100-kiloton A-bomb exploded on the surface would dig a hole 75 ft deep and 450 ft in diameter. If buried 75 ft deep, the measurements go up to 250 and 1,200 ft, respectively.
- In the presence of water, the total volume of earth moved would be about the same—but the hole would be wider and shallower.
- The cost per unit of energy for a nuclear explosion is far less than in a conventional explosion. But efficiency of a nuclear explosion is also less.
- A nuclear excavation has the disadvantage that dimensions of a crater are not generally those desired

Researchers offer some guesses on how a harbor could be blasted from hard rock in a remote region with nuclear explosions. Although the example is hypothetical, they apparently are referring to the projected harbor shot in northern Alaska.

To excavate a 250-ft-deep channel measuring 1,200 x 4,500 ft, the experts would bury four 100-kiloton devices, 65 ft deep. A 1-megaton explosion at a depth of 150 ft would produce a basin nearly 500 ft deep and 3,000 ft dia.

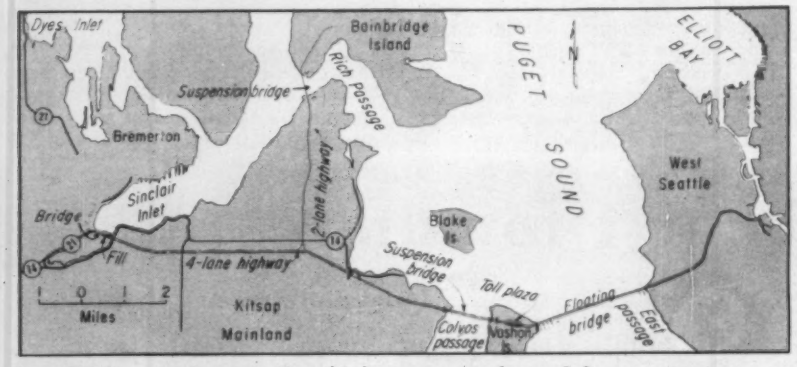
"Such an operation might be carried out for perhaps $5 million," researchers say. "Only a fraction would go into the cost of the explosives, while the remainder would be for operating expenses." (A megaton bomb is reported to cost about $1 million.)

The cost would be about 4 cents per cu yd, they say.

By conventional methods, such a volume might cost over a dollar a yard.

Despite the economic promise held out by the experts, AEC officials are not sure the Alaskan harbor project will materialize even if the diplomatic hurdles are overcome. Thus far, industries that might profit from such a harbor have shown little interest. But the commissioner is going ahead with studies of the potential site.

Commissioner Willard F. Libby, scientist member of the AEC, says: "There is no reason why any nation should object to peaceful use of atomic explosives. We can allow observers and take other steps to show that tests are entirely unrelated to weapons development."



Four bridges and connecting highways are planned for . . .

Island Hopping in Puget Sound

Final form of a $121.4 million bridge and highway project across Washington State's island-dotted Puget Sound has been settled.

Plans call for a floating bridge nearly three miles long, a high-level suspension bridge, a second suspension bridge, one lesser bridge and connecting highways.

Final form of the project was settled late last month. The state legislature's interim committee on highways indicated then it would go along with its consulting engineers' contention that proposed additions were not feasible.

Early next year the committee will recommend authorizing a $193.8 million bond issue for bridging the sound. (The extra money in the bond issue will go for such items as approach roads, capitalization of interest and retirement of other bond issues.) The committee will recommend pledging the state motor vehicle fund as collateral to lower interest rates.

The Puget Sound bridge project is a toll complex of four bridges and highways. It will connect islands with the mainland west of Seattle.

The project has been found feasible, has been accepted by the Washington State Toll Bridge Authority and construction permits for the bridges have been issued by the Corps of Engineers.

The recommendations to the legislature are being made by the Joint Fact-Finding Committee on Highways, Streets and Bridges. They are based on the findings of Porter, Urquhart, McCready & O'Brien, Newark, N. J., and San Francisco consulting engineers.

• **Four bridges okayed**—The engineers' feasibility study calls for the sound system to start with a four-lane highway west from Fauntleroy in Seattle.

A 15,482-ft-long floating bridge across East Passage will join the mainland to Vashon Island to the west. The route continues with a four-lane highway across the northern tip of the island. Vashon will also have a toll plaza.

Still going west, a 6,437-ft-long, high-level suspension bridge across Colvos Passage will connect Vashon to the Kitsap mainland.

Again a four-lane highway will push the main part of the new transportation system west to Sinclair Inlet. The inlet will be bridged south of Bremerton, and a two-lane road will connect to State Highway 21 northwest of Bremerton.

On Kitsap, a two-lane spur will go due north, bisecting the peninsula. A 2,960-ft-long suspension bridge across Rich Passage will draw Bainbridge Island into the system.

• **Four bridges denied**—The Bremerton Chamber of Commerce had asked that two existing toll bridges at Bremerton and two proposed bridges in the Bremerton area be included in the financing of the Puget Sound project.

The consulting engineers, however, found that the additional four bridges would increase the cost of the total program to a minimum of $230.5 million—but would generate little additional traffic for the sound crossing. The firm therefore recommended that the highway committee reject the proposal—a recommandation the committee indicated it would accept.

The engineers also recommended ending the ferry service between Seattle and Bainbridge Island after completion of the bridge project. They say the service would provide no fare advantage while it would divert as much as $500,000 a year from bridge revenues.

The consultant proposed a modified toll schedule for the bridge system that would permit a cheaper commutation rate for every-day commuters. The rate for a car and driver to go from Bainbridge Island to Seattle would be $1.50

Preparation of final plans for the Puget Sound project is not expected to begin until the next legislature acts.

Dam Fight Renewed

Engineers' Columbia Basin recommendations cited

Recommendation of a high dam at the Mountain Sheep site on the Snake River in Idaho this week touched off again the years-long fight over how best to develop one of the largest remaining hydroelectric power sites in the Columbia River Basin.

The new recommendation comes from the Corps of Engineers' North Pacific Division. It amounts to backing of the project by the Corps itself—despite opposition by other government officials.

Choice of high Mountain Sheep, on the middle Snake below the mouth of the Imnaha, is the hottest issue in the division engineer's document (ENR Jan. 30, p. 24 and Apr. 10, p. 25).

The report also proposes authorization and construction of 14 new projects costing nearly $1.9 billion. Reviewed last week by the U.S. Corps of Engineers in Washington, it will become part of recommendations to the Corps' Rivers and Harbors Board, which works on feasibility decisions to place before Congress.

The report came in a week when Sen. Richard Neuberger (D., Ore.), was holding hearings in the Northwest on his proposed legislation for a federal Columbia River development corporation, and when Sen. Wayne Morse (D., Ore.), said he would introduce again in Congress next year a bill for federal construction of a high Hells Canyon Dam.

The decision to recommend Mountain Sheep flouts the advice of Interior Secretary Fred Seaton. He asked the Corps six weeks ago not to block access of spawning fish to the Imnaha. Over his objection, the Corps adopted the high-dam plan and site proposed last spring by the Pacific Northwest Power Co. (a combination of utility companies) to the Federal Power Commission.

The Corps would request authorization from Congress for this new project, as well as for nine more big ones on the list. Two of the recommended projects are earmarked for the Bureau of Reclamation, which collaborated in the three-year Corps study leading to the report.

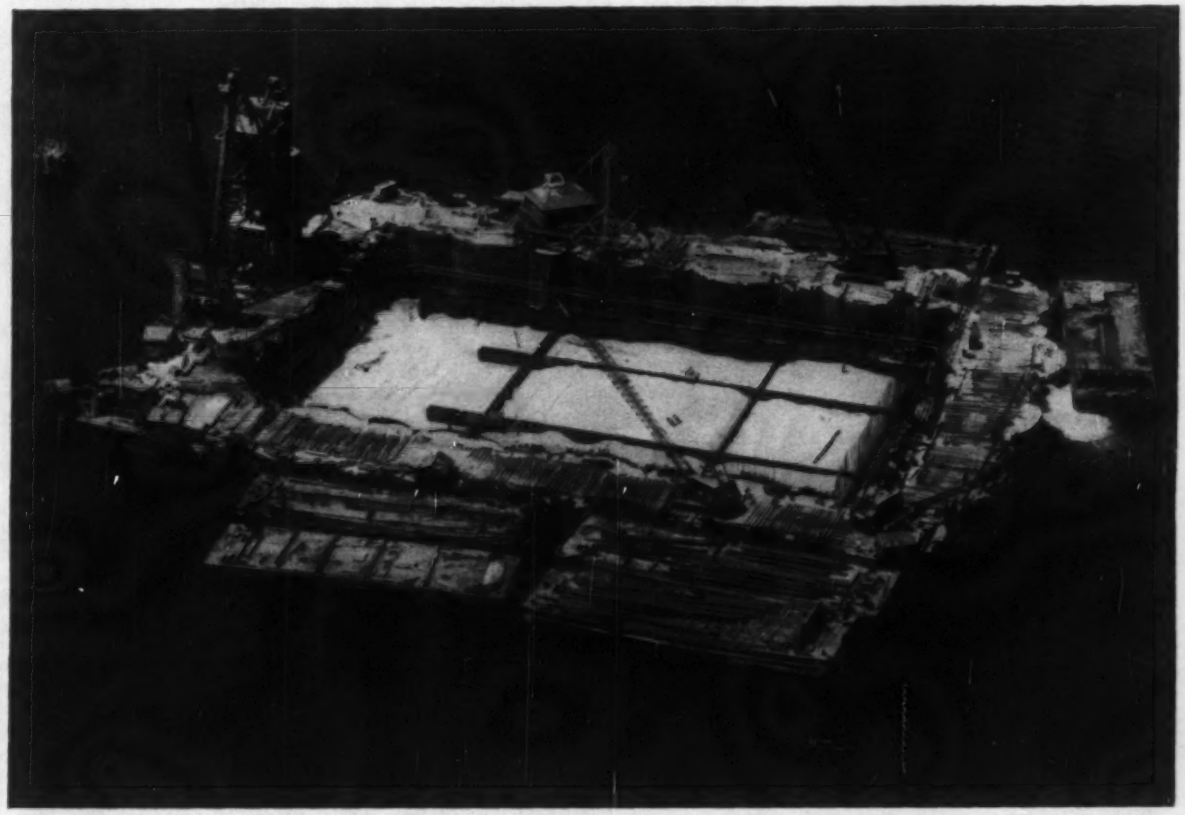
Reclamation definitely would build Ninemile Prairie Dam and power plant on the Blackfoot River and Garden Valley on the Payette.

Other Corps projects in the recommended plan are Knowles on the Flathead River, Penny Cliffs and Bruces Eddy on the Clearwater, Asotin on the Snake, Enaville on the Coeur d'Alene, and Long Meadows on the Yaak.

HOW TO HANDLE WET JOBS

#44 of a Series

Project: Queens Anchorage, Throgs Neck Bridge, New York City
Contractor: Steers-Snare, *a joint venture*
Engineers: Ammann & Whitney



Sinking of huge bridge caisson speeded after wellpoints...

Dewater Man-Made Island 30 ft Below River

In order to sink this giant caisson a cofferdam-enclosed sand island was required. (See photo). Confident that wellpointing would result in a time and money-saving operation, Steers-Snare built the island not up to river level (which was the preliminary plan) but 25 ft below.

• **This greatly reduced** the yardage of sand fill, thereby eliminating additional excavation later on. However, Griffin engineers were confronted with a difficult dewatering job, since investigations indicated many unusual problems of soil mechanics, hydraulics and stability.

• **Solution? A specially designed** Griffin wellpoint system which attained absolute control of ground water and uplift pressure and insured the stability of the cofferdam.

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What We Now Know About Paints

BRI conference compares the many new ones with the old, finds improvements still needed

. Two things are evident from the discussions at the Building Research Institute conference on field-applied paints and coatings last week in Washington, D. C.

• **Amazing progress has been made in development of paints in recent years.**

• **The construction industry is far from satisfied with paints now available.** It wants more durable, more easily applied coatings that can serve several functions. Some examples: as decoration, waterproofing and protection from chemical attack and corrosion; as germicide, insecticide and fungicide; for light control, identification, and influence on human attitudes.

The two-day conference was sponsored by BRI and the National Paint, Varnish and Lacquer Association and the Painting and Decorating Contractors of America.

Summarized at the conference was present knowledge of paints, their behavior under various conditions, advantages and limitations.

Sessions covered materials for interior and exterior of buildings, special paints and coating for industrial requirements, color, economics and construction-industry needs.

• **What builders want**—Leonard G. Haeger, architectural research consultant, recommended that a set of minimum performance standards be developed for decorative and protective coatings. He also urged development of interior coating with low permeability and exterior coatings that can be applied under all conditions of weather.

Mr. Haeger saw the need for faster, less expensive application methods and for simple testing procedures to determine thickness of dry paint films. Paints must be developed that are almost foolproof, he said.

A survey made by the National Association of Home Builders showed that what builders want most is a one-coat, fast drying paint. They also would like prefinished or preprimed materials.

• **How paints work**—Few paint specifiers other than chemists are familiar with the chemical structure of modern paints. To give paint users a better picture of these organic coatings, Prof. Wouter Bosch of the University of Missouri, described the purposes of the various ingredients composing them:

"Solvent-type paints are composed of two main ingredients, pigment and varnish," he said. "The pigment gives color and hiding power, while it also absorbs and reflects ultraviolet sunlight and to some extent reinforces the film by acting as a skeleton.

"The varnish is made up of the binder (solids, non-volatile) plus solvents. These give the paint the proper application viscosity and evaporate during the drying process. In many instances, small quantities of additives are incorporated, such as driers, wetting and suspension agents, flow promoters, thickeners, etc."

In seeking better paint vehicles, Professor Bosch said, chemists have improved on raw oils by producing bodied oils by chemically bonding single molecules to form bigger, heavier ones.

These combinations are called polymers. Further linking of heavy molecules yields copolymers with improved resistance to all kinds of damaging influences.

However, as the polymers increase in size, solubility decreases. This phenomenon led to the development of water-base, or latex, paints. Instead of being dissolved in a solvent, the polymers are held in emulsion until the water evaporates.

For some new types of paints, two different materials in low-viscosity form are mixed just before the paint is applied, Professor Bosch explained.

By application of heat or addition of a catalyst, or reaction promoter, the chemicals are made to react, producing heavy copolymers. Or the liquid resins plus a hardening agent are fed to a spray gun in correct proportions. The combination is sprayed by pressure (not air).

For still other new coatings, the material is applied as a 100% solid. The metal to be coated is heated, immersed in an air suspension of finely divided resins, and then baked.

• **How different types behave**—P. C. Herzog, Glidden Co., Cleveland, classified paints into three divisions:

• **Conventional finish**—These are the familiar oil-modified resinous materials, including natural gum varnishes.

In general, the advantages of this group are good adhesion, hardness and general performance.

Disadvantages are lack of alkali resistance, need for well-dried surfaces before application, and difficulties with penetration control and burning of color. Also, presence of organic solvents creates odors and a fire hazard.

• **Synthetic resins**—These are solvent-thinned and therefore slightly more difficult to apply than conventional finishes. But they have a much higher level of chemical resistance. They are recommended for resistance to chemical attack and moisture and for sanitation. In general, careful surface conditioning and priming are needed. And in synthetic resins, cost is high.

• **Latex paints, or emulsions**—Advantages are ease of working, excellent penetration control, good chemical resistance and good color uniformity. They can be applied to damp surfaces and are nonburning in the presence of highly alkaline spots. Absence of solvents frees them of odor and combustion hazards.

Disadvantages are difficulty of obtaining high-gloss finishes and sensitivity during the drying period to salt transfer from the base material, or substrate.

• **How to apply paints**—Raymond H. Reynolds, president of the Painting and Decorating Contractors of America, described different methods of applying coatings—by brush, lamb's wool applicators, rollers, spray and pump.

In a panel discussion, spray painting was said to give the best results, but also the worst. A painter with a brush has to get within arm's length of what he's painting, one speaker contended.

Mr. Reynolds, and many speakers after him, stressed the importance of proper surface preparation. They emphasized the necessity of a clean substrate, free of all foreign substances.

• **Why paints go bad**—Sidney Lauren, manager of Technical Services, Emulsion Division, Reichhold Chemicals, Inc., Elizabeth, N. J., listed the following examples of poor surface preparation: badly patched wall surfaces; nonuniform absorption; greasy or heavily soiled surfaces; dampness; and residues of glue size, wallpaper adhesive or other water soluble substances.

Other reasons for deterioration of interior paints, Mr. Lauren said, are choice of wrong paint and poor application and handling practices, such as thinning with incorrect solvents, use of marginally compatible tinting colors, freezing of water-thinned paints and application of paints in unheated spaces.

Deteriorating influences after application include high humidity, mold growth, high temperatures, extreme temperature cycling, soaking and substrate alkalinity combined with dampness; also, chemical attack, abrasion, impact, and staining by foods, lipstick, crayons, ink, grease, etc.

In addition, damage is caused by

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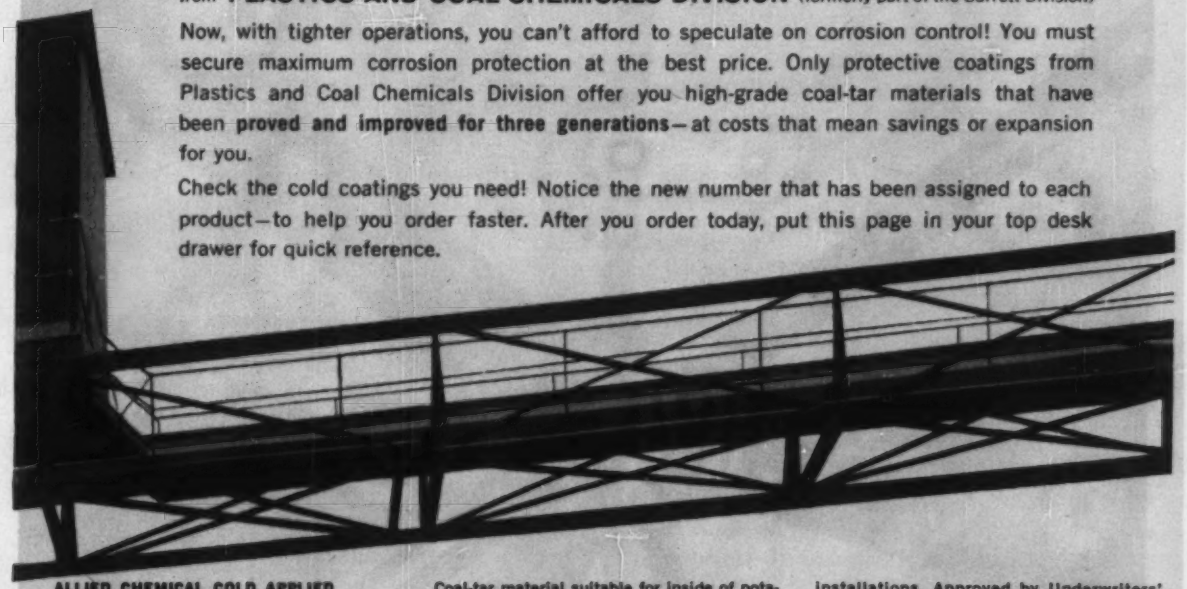

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☐ **Allied Chemical Coal-Tar Paint**—(#112)—A paint for all exposed metal work. Resists dilute nitric, sulfuric and hydrochloric acids, sulfur fumes and alkali. Use in presence of hydrogen sulfide—on pipelines, trestles, machinery, tanks, masonry and wood. In laundries, bleacheries, chemical, dye and steel plants, mines, bridges, etc. Brush or spray on. Two coats last five years under normal conditions. Covers 400 square feet per gallon per coat. Meets Military Specification MIL-P-6883.

☐ **Allied Chemical T.O.F. Solution**—(#114)—Coal-tar material suitable for inside of potable water tanks and pipes, hydrants and hose houses and equipment where no residual taste or odor can be tolerated. Meets AWWA Specification D102-55T, Sec. 5.4.6. for "Cold-Applied T & O Tar Base Paint."

☐ **Allied Chemical Industrial Coating**—(#120)—Special purpose, reinforced, heavy-duty coal-tar pitch coating for severe corrosive conditions. Brush or spray it on metal, concrete and stone masonry. Reinforced with inert minerals. Equivalent to about three coats of ordinary paint. Withstands wet heat of 185° F. and dry heat of 400° F.

☐ **Allied Chemical 34Yc Coating**—(#134)—A plasticized thixotropic, coal-tar material that meets requirements of the U. S. Navy, Bureau of Yards and Docks Specification No. 34Yc. Use it on exposed metal work where corrosion is severe due to salt spray and other reactive conditions—piers, ships, floating drydocks, service vessels and for offshore oil and gas wells. Use also for nuclear installations. Approved by Underwriters' Laboratories, Inc. for use on septic tanks—bituminous coated, System II.

☐ **Allied Chemical CA 50 Coating**—(#150)—A plasticized, gel-type, coal-tar material that meets U. S. Bureau of Reclamation Specification No. C.A. 50. Apply it at atmospheric temperatures, wherever extra-heavy and durable protection is required. Protects concrete work, dams, penstocks and bridge piers. Also, exposed trestle work, exposed concrete or metal work subject to extreme corrosion. Used when an engineer desires to achieve maximum thickness with minimum number of coats.

☐ **Allied Chemical Service Cement**—(#160)—Service mastic with high-grade, coal-tar pitch base, plastic material. Apply it cold to field joints of welded pipe. You don't have to prime or torch surface. Use it with our Pipeline Fabric. Inert, waterproof, non-corrosive to steel surfaces. Not affected by soil acids and alkalies. Meets Specification SSC-153, Type II.

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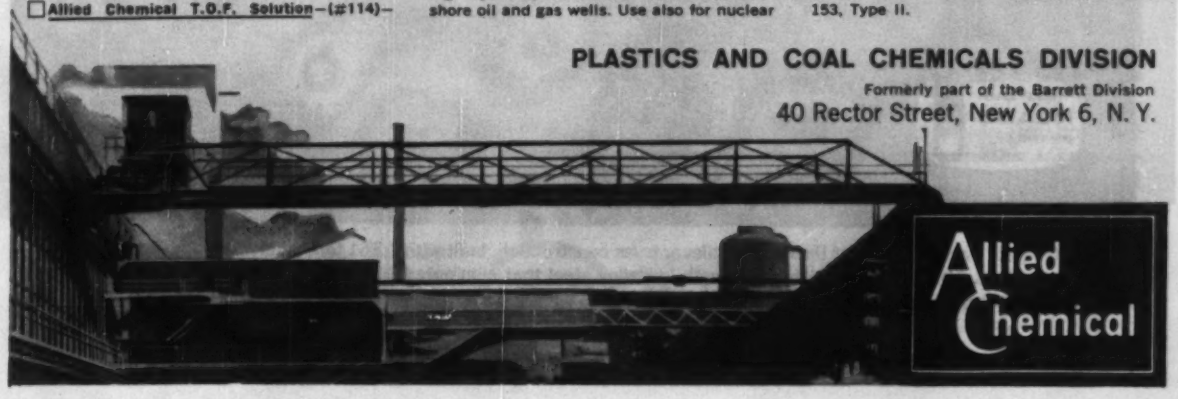

Bridge designers save

The 1,020′ Agate Pass Bridge is of through cantilever truss construction, built with 1,561 tons of steel. 650 tons are USS COR-TEN Steel, a high-strength low-alloy steel that eliminated 300 tons of dead weight and saved $87,000 in total steel costs.

$87,000 with USS COR-TEN Steel

in the Agate Pass Bridge

WHEN YOU BUILD with a stronger steel, you need less steel. That's why this bridge was built with USS COR-TEN Steel chords, floor beams, diagonals and verticals. Because COR-TEN Steel is 50% stronger than structural carbon steel, the members are thinner. According to estimates by the State of Washington, Dept. of Highways, COR-TEN enabled a total weight elimination of 300 tons of steel—an $87,000 saving.

USS COR-TEN Steel has a minimum yield point 50% higher than that of structural carbon steel, and in thicknesses of ½" and under it meets all the requirements of ASTM Specification A242 for High-Strength Low-Alloy Steels. On this bridge, the COR-TEN Steel members are about one-third lighter than carbon steel would be if used in the same locations. Dead weight was materially reduced, freight costs were lower, and construction was easier. And, since COR-TEN Steel has 4 to 6 times more resistance to atmospheric corrosion than carbon steel, the Agate Pass Bridge will stand up better under the corrosive salt air of this area.

For more information about weight-saving, economical construction with USS High Strength Steels—COR-TEN, TRI-TEN, and MAN-TEN—write for a copy of our "Design Manual for High Strength Steels," United States Steel, 525 William Penn Place, Pittsburgh 30, Pa.

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The Agate Pass Bridge · Owner: State of Washington · Designer: Department of Highways, State of Washington · Contractor: Manson Construction & Engineering Co. · Fabrication and Erection: American Bridge Division, United States Steel

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. . . What we now know about paints

scrubbing to remove stains, ultraviolet light and adhesion failure.

C. W. Shay, technical adviser, Trades Sales Finishes Division, E. I. du Pont de Nemours & Co., Wilmington, Del., explained why humidity presents a painting problem: moisture plays a major role in corrosion, produces physical changes in paint films and entraps chemical contaminants.

With considerable qualification, Mr. Shay listed the following paint types in order of preference for use in high humidity: vinyls (sensitive to surface preparation, restricted to sprays, limited to temperatures under 125 F), epoxies (enamel and catalyst must be job mixed), phenolics (sensitive to surface preparation and alkalies, limited to use at temperatures under 125 F), elastomers (excessive dirt collection possible), epon esters, alkyds and oleoresins.

Outdoors, paint durability is also influenced by sunlight, heat, cold, rain, mold growth and other natural elements, said J. C. Moore, technical director, Coatings Research Group, Inc., Bethesda, Md.

Gerould Allyn, Rohm & Haas Co., Philadelphia, noted that each major type of unpainted masonry surface requires slightly different surface preparation for best results. For outdoor masonry, two or three coats of paint should be used.

Mr. Allyn compared the different types of masonry paints in common use and discussed their relative merits.

Cement-based paints, consisting of cement, lime, pigment and sometimes sand, must be used on bare masonry or similar paint. They do a good job of sealing the surface.

Fill coats are similar in composition, application and use to cement-based paints, but with an emulsion added in place of some of the water. They give improved adhesion and a tougher film than the unmodified cement paints.

Solvent-thinned masonry paints include oil-based, alkyd, synthetic rubber, chlorinated rubber and epoxy paints.

Oil-based paints cannot be applied to damp or strongly alkaline surfaces.

Alkyd paints are harder to brush, but dry faster and yield harder, more durable films.

Synthetic rubber and chlorinated rubber paints require stronger solvents. They're more difficult to brush than oil and alkyd types. But they have excellent penetration and adhesion and are highly resistant to chemicals.

Epoxy coatings appear particularly promising for severe service applications. Some types, however, show rather fast chalking rates outdoors.

Emulsion paints for masonry include butadiene-styrene, vinyl, acrylic alkyd and multicolor lacquer.

Butadiene-styrene, or rubber-based paints, are low in cost and have outstanding alkali resistance.

Polyvinyl-acetate paints, in the same price range, dry faster.

Acrylic types permit recoating in 30 minutes or less, have excellent resistance to alkali, scrubbing, ultraviolet light and water spotting.

Alkyd emulsion paints, though adhering better on chalky surfaces than other latex types, are slow drying, have more odor and do not offer as much resistance to alkali.

Multicolor lacquers, sprayed on base coats, such as polyvinyl acetate or acrylic emulsions, cover surface defects and irregularities with a polka-dot pattern.

• **Protective paints for metals**—Pigments serve many purposes in paints used to protect steel. According to Arnold J. Eickhoff, National Lead Co. Research Laboratories, Brooklyn, N. Y., the pigment in the primer must have corrosion-inhibitive properties, good package stability, good film-forming properties, good weather resistance and controlled reactivity with the vehicle in the dried paint film.

Among the better-known corrosion-inhibiting pigments are zinc yellow or basic-potassium zinc chromate, which performs best in water-resistant vehicles, such as alkyd or phenolic varnishes; basic zinc chromate, used with vinyl butyral resin and mixed with phosphoric acids just prior to use; basic lead chromate; red lead, and basic lead silico chromate.

Utility Joins City in Dam Heightening Project

Georgia Power Co. and the City of Atlanta will split the $1 million cost of adding 6 ft to the height of 54-year-old Morgan Falls Dam on the Chattahoochee River.

Atlanta voters have approved a bond issue to raise their half and the utility has asked the Federal Power Commission for permission to go ahead.

Raising the level from its present height of 50 ft will add storage capacity for the city, which uses the Chattahoochee as its water supply source. For the power company, the extra height will be a means of re-regulating flow from the Corps of Engineers' Buford Dam, 40 miles north of Atlanta.

High flow at Morgan Falls occurs at midnight now. Obviously this isn't the time when it is most needed by either the city or the power firm. By raising the dam level, the water can be released during the daytime.

Report Blames Contractor For Vancouver Collapse

Dominion Bridge Co. has been found responsible by a Royal Canadian Commission for three items of negligence in the collapse of the Second Narrows Bridge at Vancouver, B. C. (ENR June 26, p. 21).

Canadian Premier W. A. C. Bennett last week released the report of a special commission headed by Chief Justice Sherwood Lett. The report listed the three main factors as:

- Failure to design properly the temporary bent supporting the cantilevered bridge section that was first to collapse.
- Not submitting design plans of the falsework to the engineers for checking.
- Allowing comparatively inexperienced engineers to design the upper grillage of the temporary bent without adequate or effective checking of the design and calculations.

The report substantiated findings submitted earlier this fall by a board of investigating engineers (ENR Oct. 9, p. 24). It also charged "lack of care" on the part of Swan, Wooster & Partners, the design engineers, in not requiring the contractor to submit falsework plans to them. The commission recommended that hereafter bridge authorities require consulting engineers to get all plans from contractors, including those for temporary work.

U.S. Engineers Seek Bids For Greers Ferry Dam

The Corps of Engineers will receive bids February 10 for the construction of Greers Ferry Dam on the Little Red River near Heber Springs, Ark.

The $20 million dam will be the fifth of nine authorized in the White River Basin for flood control and hydroelectric power production.

Greers Ferry will be a gravity-type concrete structure 243 ft high and some 1,700 ft long. It will contain 820,000 cu yd of concrete. Its reservoir is expected to cover about 31,000 acres extending 50 miles upstream.

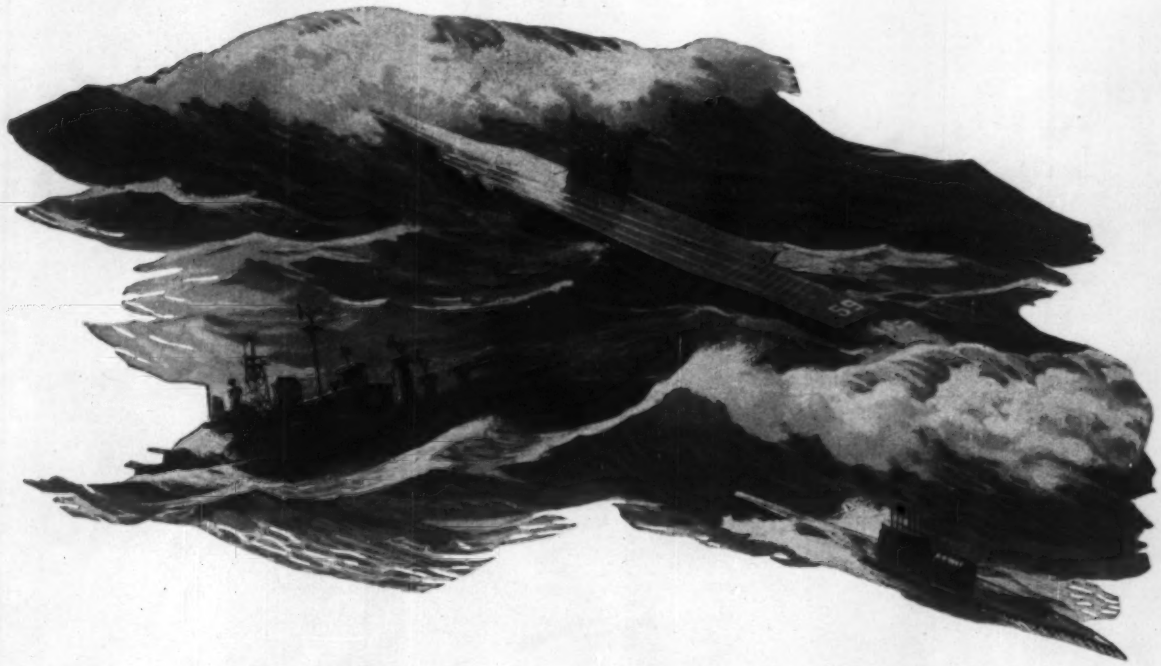
Separate contracts will cover powerhouse construction, power equipment and other parts of the project.

The total job including powerhouse, land and highways, may be $56 million. Completion is scheduled for 1963.

Builders Lose Fight Over Water Extension Refunds

Little Rock subdivision builders apparently lost the last round in their fight against a reduction of municipal refunds for the extension of water mains.

The builders won a delay late last summer (ENR Oct. 16, p. 182), but now the Municipal Waterworks Commission has made up its mind.



Storms a la carte . . . . . .

The 5-ton wave-generating weldments in the new David W. Taylor Model Basin, Carderock, Maryland, were made by the Butterworth Contract Manufacturing Division, under contract with Blount Brothers Construction Co., Montgomery, Alabama, general contractors.

In addition to testing the seaworthiness of ships, the model basin will also be used to simulate shore conditions and test landing craft. It's a U. S. Navy project.

Shown at left is a Butterworth production bay where the weldments were produced. Big, rugged, yet maximum over-all tolerances of 1/16-inch were maintained throughout as components had to be precisely located in the welding fixture. Machining tolerances on some parts were held to plus or minus .0005".

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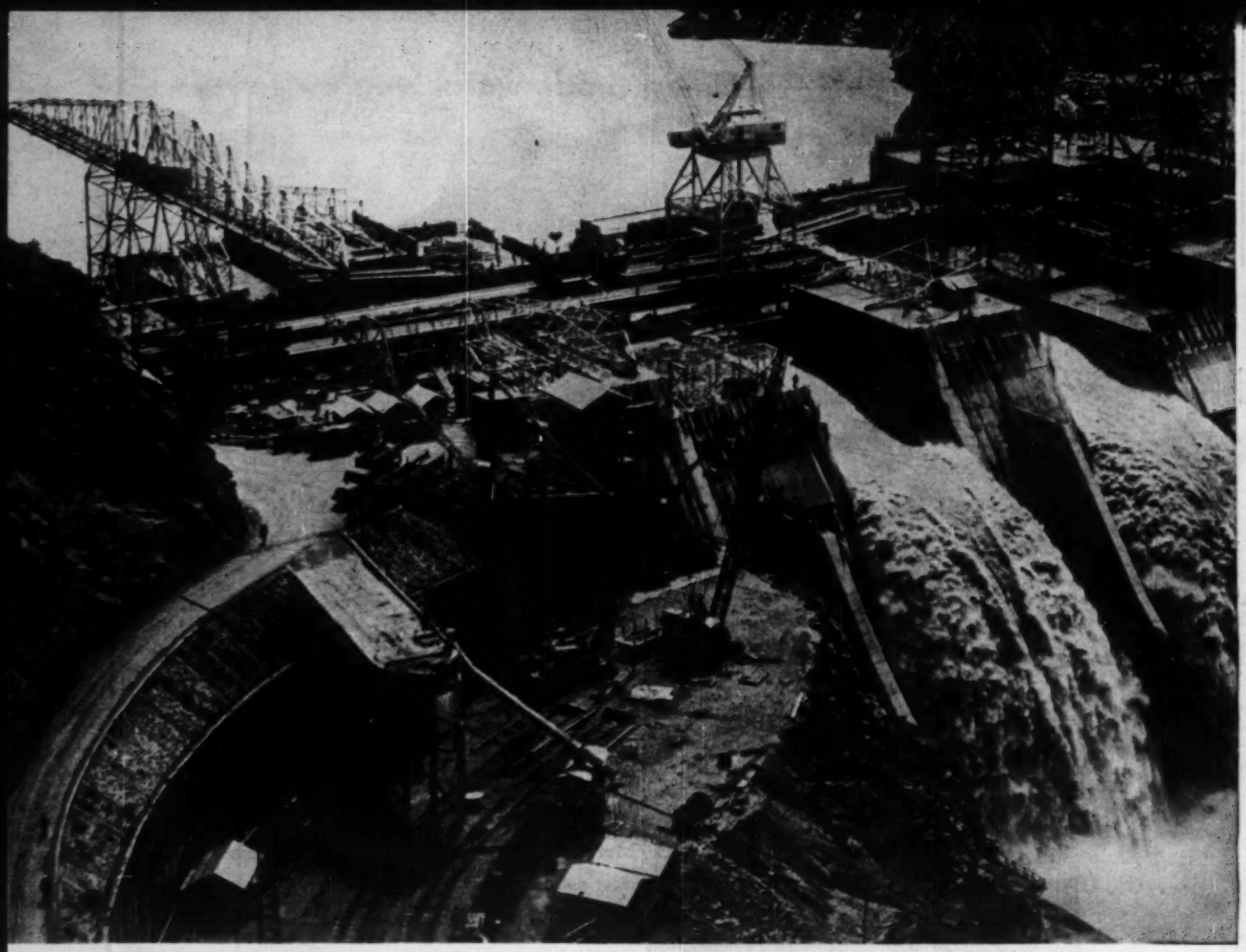
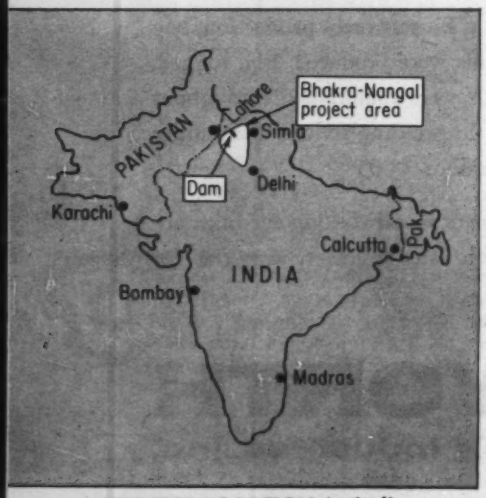


First stage concreting cranes (left) will roost on high trestle (right) now under construction as . . .

Bhakra Dam Second Stage Gets



PROJECT LOCATION in India

M. R. Chopra
Chief Engineer, Construction
Bhakra Dam, Nangal Township, India

Concreting started this month on the second and last stage of construction of Bhakra Dam, key unit in India's $360 million Bhakra-Nangal power and irrigation project.

The dam will be the second highest concrete gravity-type in the world—740 ft. Switzerland's Grand Dixence, also under construction, is planned for a height of 940 ft. Hoover Dam, at 726 ft, is now the highest.

Excavation began in November, 1953. The dam is now at a height of 390 ft, with 2,930,000 cu yds of concrete already placed. It is now safe against floods and able to store water in its reservoir.

Another 2,495,000 cu yd of concrete will be needed to bring the dam to its ultimate height. A new batching and mixing plant has been installed at a higher level than the previous one. It will feed the concrete-placing gantry cranes. These have been set on a new high-level trestle erected above the first stage concrete.

When the dam is complete, a total of 5,425,000 cu yd of concrete will have been placed. About 5,000,000 cu yd of this will be in the dam itself. The remainder will have been utilized for lining two diversion tunnels of 50 ft finished diameter and for constructing two powerhouses, switchyard facilities and various other minor structures.

• **Already paying off**—To furnish some of the project's benefits as quickly as possible, constructors have already finished several of its units. Nangal Dam, the Nangal-Hydel Channel and some of the irrigation canals (see "Vital Sta-

THESE EARLY TRESTLES are now buried . . .

. . . in first stage concrete. Powerhouse is under way (right).

Under Way

tistics," page 42) are completed. They utilize run-of-river water during the summer months.

Work was begun on these other facilities even before Bhakra Dam construction got under way. Nangal Dam was completed in September, 1951; Nangal Hydel Channel, in July, 1954; the first power plant on the channel, at Ganguwal, in January, 1955; and the second power plant, at Kotla, in June, 1956.

The dam's 50-ft-dia, half-mile-long diversion tunnels were started in 1948.

• **Unusually difficult job**—Its size, its unusual foundation conditions and its isolated, mountain gorge site made the Bhakra Dam construction a notably difficult undertaking. Particularly difficult was the first stage work.

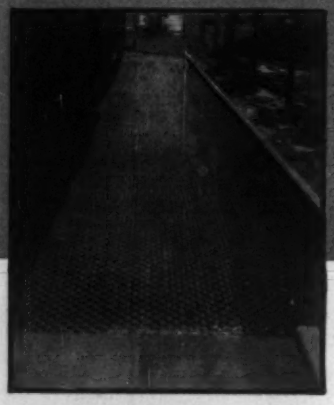
Driving the diversion tunnels had been begun as a force-account job. After careful consideration, the authorities decided to carry out the entire project by this method, with all engineers and workers on the payroll of the Punjab government.

In February 1952 authorities hired Harvey Slocum of the U. S. to prepare the master plan and to head the construction organization.

The constructors' first problem was to gain access to the site. Then they had to level areas on the steep-sided gorge where the units of the construction plant were to be installed.

A rail line had to be extended 8 miles, from the rail-head at Nangal to Bhakra, and a combination rail and road bridge had to be built across the river about a mile below the damsite. Moreover, a 30-mile network of 40-ft-wide haul roads had to be built through terrain requiring several cuts as deep as 350 ft. Two 25-ft-dia tunnels, totaling 1,200 ft in length, also had to be driven

LOADING PLATFORMS MUST BE TOUGH CLEAN DRY



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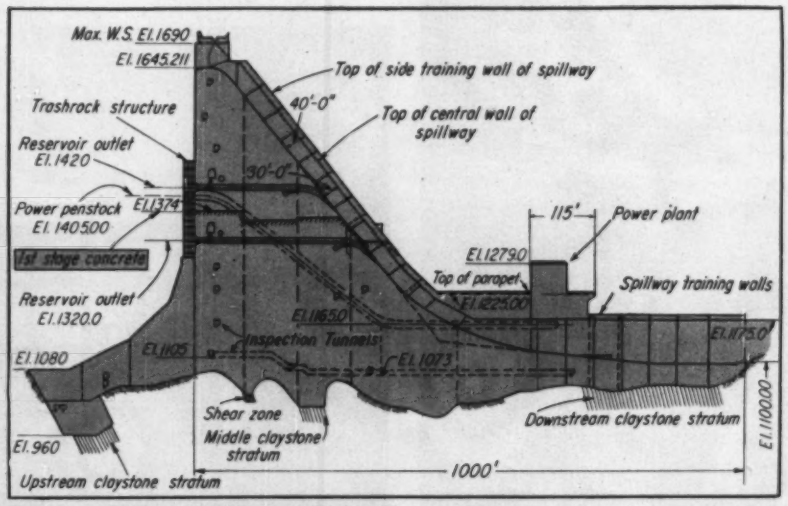


TYPICAL CROSS-SECTION of Bhakra Dam emphasizes its size and shows the three claystone strata that complicated foundation construction.

to give access to the batching and mixing plant and, from there, to the dam.

Leveling two big terraces, with a total area of 700,000 sq ft, was another big preparatory job. These terraces provided space near the dam for such facilities as aggregate stockpiles, refrigeration plant, warehouses, repair shops. hospital and offices. Then, two miles farther downstream, at the village of Neilla, another operational base was built. Located there were the sawmill, carpenter shop, fuel storage and reinforcing rod fabrication facilities.

Finally, a complete structural steel fabrication shop, machine shops and foundry were constructed at Nangal. Plants were set up for bottling oxygen and acetylene and for retreading tires.

All the steel structures for the dam, except the first concreting trestles, were designed and fabricated at Nangal. This was cheaper than importing steel from abroad and provided specialized training for the local workmen.

Some 11,000 ft of steel pipe for penstocks and reservoir outlets are now being fabricated, using plates up to a maximum thickness of 1⅛ in. Indian mechanics, trained by the American staff, are performing all the operations, including welding, stress relieving, gamma and x-ray inspection and hydrostatic testing up to pressures of 500 psi.

Other preliminary work included construction of two cofferdams—one, 215 ft high, upstream and the other, 132 ft high, downstream.

Excavation for these structures and for roads and terraced areas came to 3,200,000 cu yd. And this was only the beginning. The dam itself required excavating an additional 5,300,000 cu yd, including 500,000 cu yd in the diversion tunnels.

Dam foundation excavation was increased and complicated by the presence of layers of claystone in three different locations—upstream at the heel of the dam, directly under the center of the dam and downstream under the spillway apron. The claystone under the spillway apron extended also under the left powerhouse location.

The builders had to remove all the claystone under the heel and replace it with concrete. This proved to be one of the toughest jobs on the project.

This upstream claystone band, roughly 90 ft wide and 240 ft long, extended to a depth of 200 ft under the riverbed. It was removed by open cut and by mining. It is believed that mining had never before been used in the foundation treatment of a high dam.

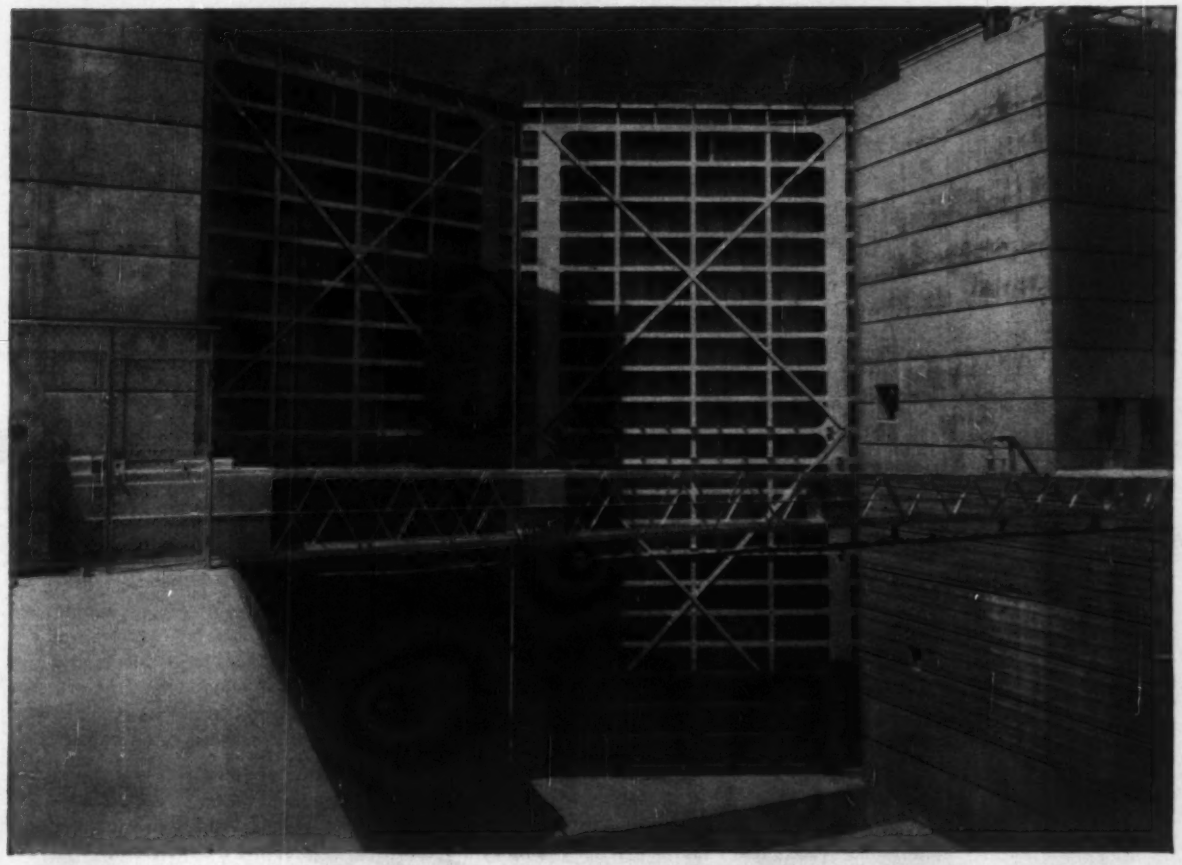
Not only the claystone, but the foundation rock itself posed difficult construction problems. It was highly jointed and fractured. Therefore a huge consolidation grouting job was necessary. Workmen drilled some 570,000 lineal feet of holes, and injected about 38 million lb of cement into them.

• **A spread out concrete plant**—First stage concreting had to cover an area extending 1,320 ft up and downstream and entirely across the gorge. Cableways were considered; but it was soon evident that placing the concrete by gantry cranes from steel trestles, as Mr. Slocum had done on Grand Coulee, Friant and Bull Shoals dams in the U.S., would be more expeditious and economical.

The builders installed four trestles, three across and one lengthwise of the site. The lengthwise trestle handled the concrete for the spillway apron and

(Story continued page 40)

STEEL-WELD FABRICATION . . .



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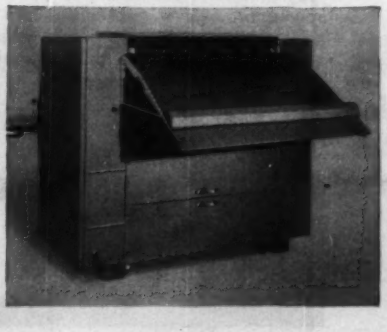
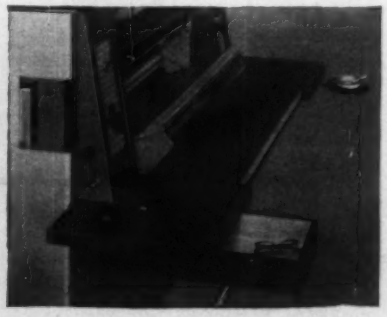
A flick of a lever provides front or rear print delivery. Rear print tray can be adjusted to different angles and to accommodate varied size prints up to 32 inches long. Roll-up attachment available.



Spacious 92-inch long feedboard is formica-surfaced with chrome-plated metal edge. Vacuum apertures hold roll and sheet stock in position. Drawer and swing-out ash tray provide added convenience.



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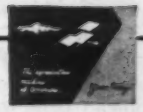

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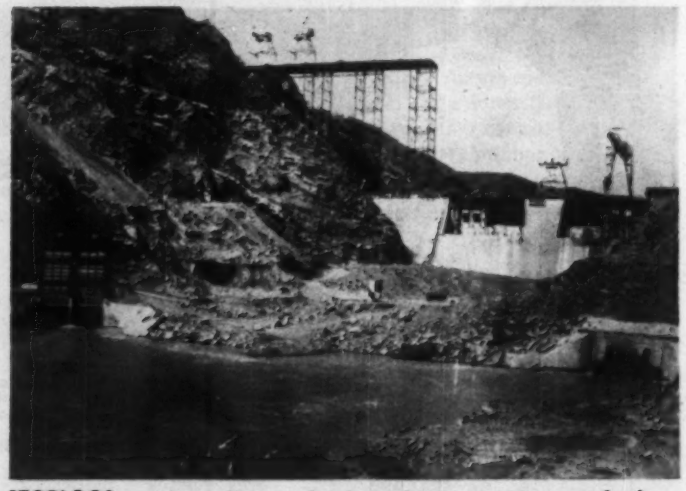
PREPARING FOR SECOND STAGE, a high level concrete plant is being built above the first stage plant (left).

RESERVOIR OUTLETS were buried in first stage concrete; second set will go in higher up.



STOPLOGS are in position to be dropped into upstream portal of left diversion tunnel. Right diversion tunnel has regulating gates.

high training walls resting on it.

These trestles were made high enough to concrete the entire first stage up to an average elevation of 1350. In addition, separate low level trestles were installed to serve the upstream claystone band and the left bank powerhouse.

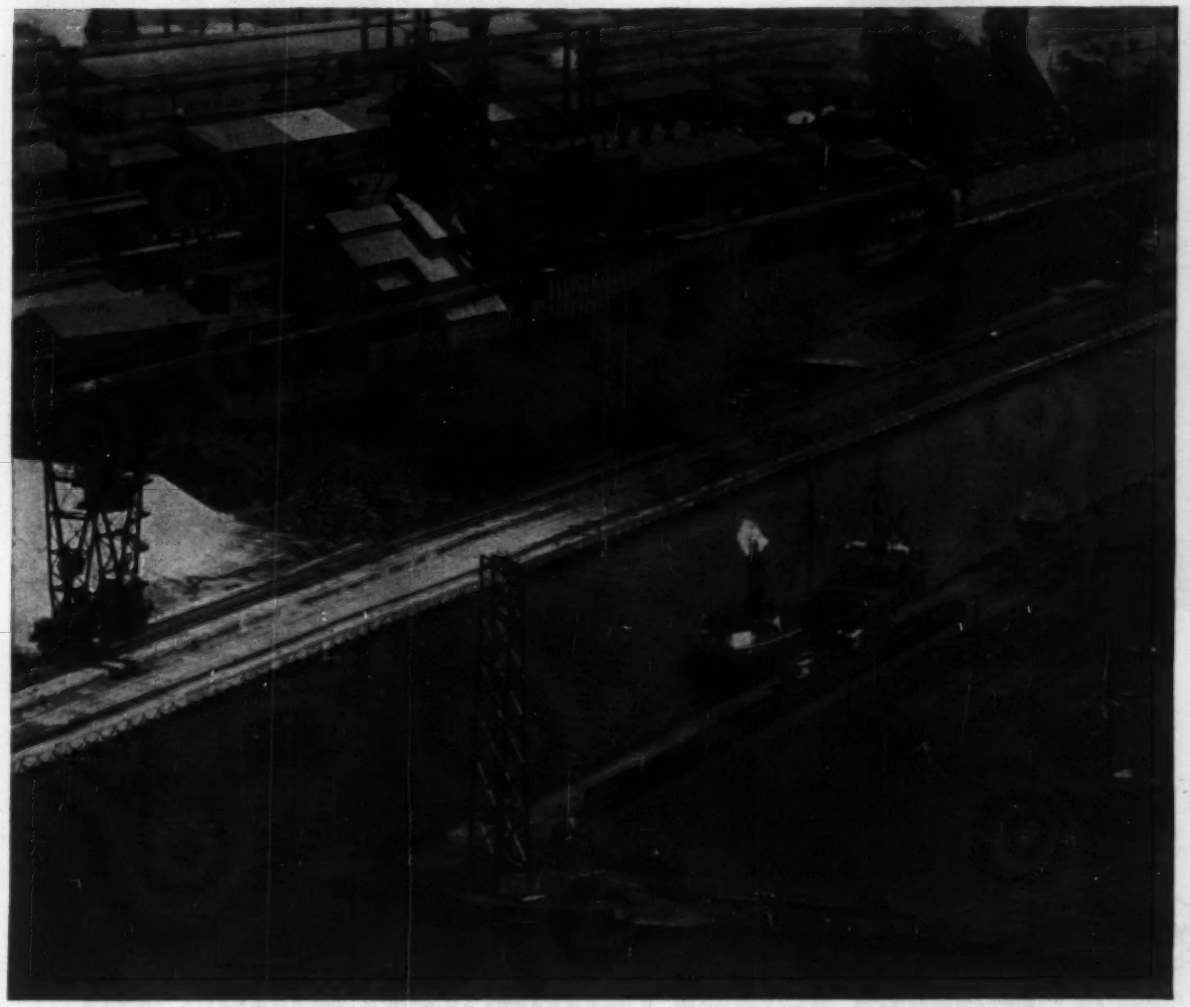
The first bucket of concrete was placed in November, 1955. It required fifteen months to place the first million cubic yards, but the second million was placed in only 7 months.

The 8-hour record was 3,202 cu yd, and the 24-hour record, 9,104 cu yd. The largest monthly total was 163,820 cu yd, in April, 1957. None of these yardages taxed the capacity of the plant which contained four 4-cu yd mixers.

During this first stage concreting, 2 million ft of cooling pipe and 830,000 ft of grout pipe has been installed. Also 19,500 tons of reinforcing steel has been placed in the dam and appurtenant works.

• **Half finished but in service**—Although the second stage concreting is just starting, Bhakra Dam has already stored water from the 1958 monsoon season.

(*Story continued page 42*)



GREAT LAKES INDUSTRIAL CANAL DEEPENED TO ACCOMMODATE VESSELS OF GREATER DRAFT

The St. Lawrence Seaway will have an enormous impact on Great Lakes ports. Channels will be dredged deeper and docks rebuilt to handle the larger capacity ships that will eventually sail 2300 miles into the North American heartland.

The Seaway, expected to be completed in 1959, will add more than 8000 miles of new coastline to the United States and Canada. Much of this inland waterway is already navigable, and only dredging and deepening will be necessary to meet the Seaway's 27-ft channel specifications.

At Buffalo, the ship canal shown above was deepened from 23 ft to 29 ft. To accomplish this, a new steel-piling dock front had to be constructed, extending the walls down to the new canal bottom. Various types of dock wall construction were used, employing many thousands of tons of Bethlehem steel Sheet and H-Piling. The docks, which serve the plant for receiving raw materials and shipping finished steel products, have a length of nearly 10,000 ft.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

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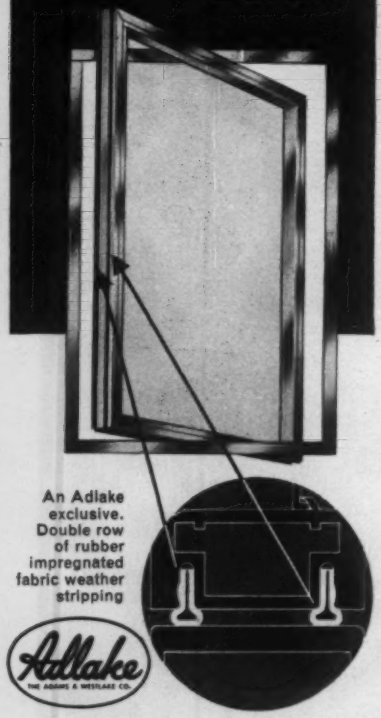

An Adlake exclusive. Double row of rubber impregnated fabric weather stripping

Adlake—and only Adlake—is double sealed with a resilient, rubber impregnated fabric weather strip, permanently positioned in an aluminum binder. This seal has proved *impervious to the elements* in rigorous laboratory tests and in long years of service.

Cold and inclement weather will not affect this weather stripping. In all climates it keeps heated and conditioned air *IN*, water and outside air *OUT*.

That is one reason why there are nearly as many Adlake reversible aluminum windows in service as all other makes combined. Other reasons are: Adlake windows operate at a finger touch. They will never rot, rust, rattle, stick or screech. They will never need paint. Adlake guarantees satisfaction. When you install Adlake you know you are getting the best.

Let us send you the details about Adlake windows. Just write The Adams & Westlake Company, 1184 N. Michigan, Elkhart, Indiana.

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Adams & Westlake
COMPANY
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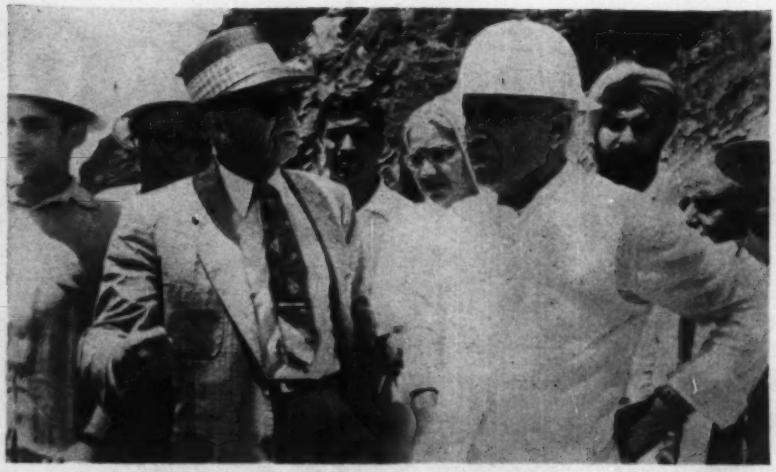

THE TOP BRASS, India's helmeted Prime Minister Pandit Nehru (right) and Harvey Slocum, chief of construction, review progress on the damsite.

This can be released at will thanks to river control facilities installed in the diversion tunnels. These consist of stoplogs in the upstream portal of the left tunnel and regulating gates at about the midpoint of the right tunnel.

To install the gates in the right tunnel, a 50-ft-high chamber, 60 ft square, was hollowed out of the soft and loose rock above it. To close the left tunnel, two 100-ton stoplogs were suspended by wire ropes from a steel frame erected over the portal, and then dropped instantaneously by cutting the ropes with an acetylene torch.

Two low blocks have been left in the dam to serve as a spillway when needed. When the river was in flood last summer 129,000 cfs was passed downstream by this route. About 500,000 acre-ft of water was stored in Gobind Sagar this summer, enough to provide one irrigation watering to about 600,000 acres of crops worth about $8 million.

Bhakra Dam: Vital Statistics

• **What**—Bhakra Dam will be the central unit in India's $360 million Bhakra-Nangal power and irrigation project. At 740 ft, it will be the second highest concrete, gravity-type dam in the world. Grand Dixence, under way in Switzerland, is planned for a height of 940 ft. Hoover Dam, at 726 ft, is now the highest dam in the world.

Bhakra Dam will measure 1,700 ft along its crest and 325 ft between abutments at the bottom of the gorge. Up-and-downstream at the base, the dam measures 625 ft and, including the spillway apron, extends for a distance of 1,320 ft.

It has a central, overflow-type spillway equipped with 45-ft-high gates. There are 16 irrigation and reservoir control outlets in two tiers at elevations 1320 and 1420.

The dam was first planned in 1945 for a height of 640 ft, with its crest at El 1600 and reservoir surface at El 1580. After India won its independence in 1947, however, the government decided to raise the crest to El 1700 to develop the site to its maximum.

Foundation investigations showed this to be feasible. Maximum water level will now be at El 1680. That will provide a 70-sq-mile reservoir, 60 miles long. The reservoir has been named Gobind Sagar after the great Sikh Guru, Gobind Singh.

• **Where**—Bhakra Dam is located on the Sutlej River in Punjab province in northwest India. It has a 7.4-million-acre-ft reservoir (5.7 million acre-ft of it is live storage).

• **Why**—The project will provide water for the irrigation of 10 million acres of land. Of this, 6.4 million acres have never before been irrigated. About 3.6 million acres of the new areas will be under crops each year. The remainder will lie fallow.

• **The Big Picture**—In addition to Bhakra Dam, the Bhakra-Nangal project has these facilities:

- A power plant of five 90,000-kw units at the left dam abutment—now under construction.
- A similar power plant, to be built later, at the right abutment.
- Nangal Dam, a 91-ft-high, gated, concrete diversion dam. It is located eight miles downstream from Bhakra.
- The Nangal-Hydel Channel, a 40

Thirty more miles of concrete pipe were added to Milwaukee's sewer system in 1957, most of it 8" I.D.

In Milwaukee...

the entire residential sewer system is concrete pipe

Concrete pipe was chosen by Milwaukee in 1923 for its new residential sewage collecting system. All submains and mains have been included in this continuing program. Performance record? Not a single failure attributed to the pipe where it has served residential use.

That's because concrete pipe has uniformly high strength right from the start...and because concrete, by its very nature, grows stronger year by year.

Milwaukee chose concrete pipe because it meets the requirements of uniformity of strength—strength to carry all the loads—durability, availability and low initial cost.

Add maximum hydraulic capacity and long life. Put all these advantages together and it's easy to see why more and more municipalities are finding concrete is the answer to low-cost, trouble-free pipelines. Write for free literature, "*Concrete Sewers*," distributed only in the U.S. and Canada.

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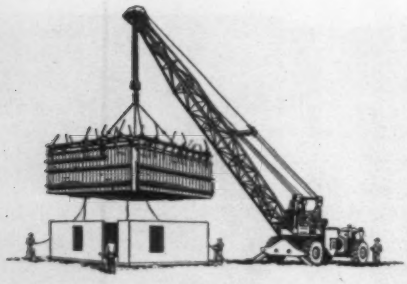

Electric Loaders

by R. G. LeTOURNEAU

When there are only two kinds of machines available to do a certain job, you naturally get to thinking in terms of one or the other. Then a third type of machine comes along and you have to readjust your thinking.

Take mobile cranes for example. For years there have been just two kinds — *truck-mounted* and *track type*. Each one has certain advantages under specific operating conditions, as well as some disadvantages.

But a new one has come along, our Mobile Electric Crane. It has the advantages of both types, and few of their disadvantages. Let's look at all three — call them Truck, Track, and Electric — and let's check three main points in crane operation.

First, *mobility*.

The Truck type must use outriggers when lifting, and you usually have to get off the machine to set them and pick them up. You also must leave the work cab and go to the driving cab before moving. Highway travel speed is where it shines.

With the Track type crane you have no outriggers to handle, but travel speed is slow and you lose time getting from working gear into traveling gear and then in shifting to make a turn.

With the Electric you work or drive from the same cab. Press two buttons on the instrument panel to set or retract the outriggers in a matter of seconds. Then move the controller handle and you're on your way, forward or reverse — even while still swinging the boom or lifting the hook. Press another button and you can steer the rear wheels almost to a right angle, heading crosswise in much less time than the Track or Truck type. What's more the Electric doesn't have to take a back seat on road speed.

For our second comparison, let's take *flotation*.

The ordinary Truck type gets stuck in the mud much easier than the Track. The Electric will go places where the Truck type won't, and most places where the Track can go. In fact with these big tires you've got as great an area in contact with the ground as the Track. If you get sunk down a foot deep in mud, the Electric still has clearance, and with all the Electric Wheels driving, you've got what it takes to go. Under the same conditions, the ordinary Truck crane couldn't go at all and it's doubtful if even the Track could navigate with its tracks bogged down one foot deep.

A third consideration might be *ease of operation*.

Both the Truck and the Track have levers to pull and clutches and brakes to push. All functions of the Electric are controlled by finger tip switches from the operator's seat — electric motors driving all the wheels, and there are no clutches or brake bands to wear out.

These Electric mobile cranes are built in 30 and 45 ton capacities or larger and with any type of boom desired. We have them operating on construction jobs, military projects, and in the logging woods. If you're looking for a big mobile loader with greater mobility and ease of handling than the kinds you've been used to up to now, why not get in touch with us? We'd be glad to work with you.

R.G. LeTourneau

R.G. LETOURNEAU INC

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LONGVIEW, TEXAS

R-111

. . . Bhakra Dam

mile-long, 12,500-cfs, lined canal. The canal takes off from Nangal Dam.

- Two 36,000-kw (ultimate capacity) hydro plants on the Nangal-Hydel Channel.
- A 700-mile network of irrigation canals and branches. The Nangal-Hydel Channel discharges into this network.
- Some 2,100 miles of irrigation laterals.

• **Who**—The organization carrying out the Bhakra Dam project is made up of three directorates—for designs, for construction and plant design, and for inspection and control.

P. S. Bhatnagar heads the designs directorate, which is located at New Delhi. R. S. Gill is in charge of the inspection and control directorate at the dam. Harvey Slocum heads the construction directorate.

All these directorates are under the general administrative control of S. D. Khungar, general manager, Bhakra Dam.

There is an over-all control Board. Chairman is C. P. N. Singh, governor of the Punjab. The board includes financial and engineering representatives of the central government and of the participating state governments.

A consulting board advises on technical matters from time to time. A. D. Khosla is the chairman of this board and its members include prominent engineers from the U. S. and India, including Mr. Slocum.

Engineering personnel on the project includes 300 graduate engineers and 500 non-graduates. The maximum number of workers at any time has been 12,000. This figure includes workers at the Nangal workshops. The population of Nangal Township has swelled from 500 to about 20,000.

American Contractors Plan Australian Resort

South Stradbroke Island may become for Australians what Catalina Island and Key West are to Americans—a sea-bound tourist resort.

Kaiser-Perini-Morrison-Raymond, a U. S. joint venture, are planning to develop the island, which is just off the Queensland coast. Their plans include construction of a bridge to link island and mainland.

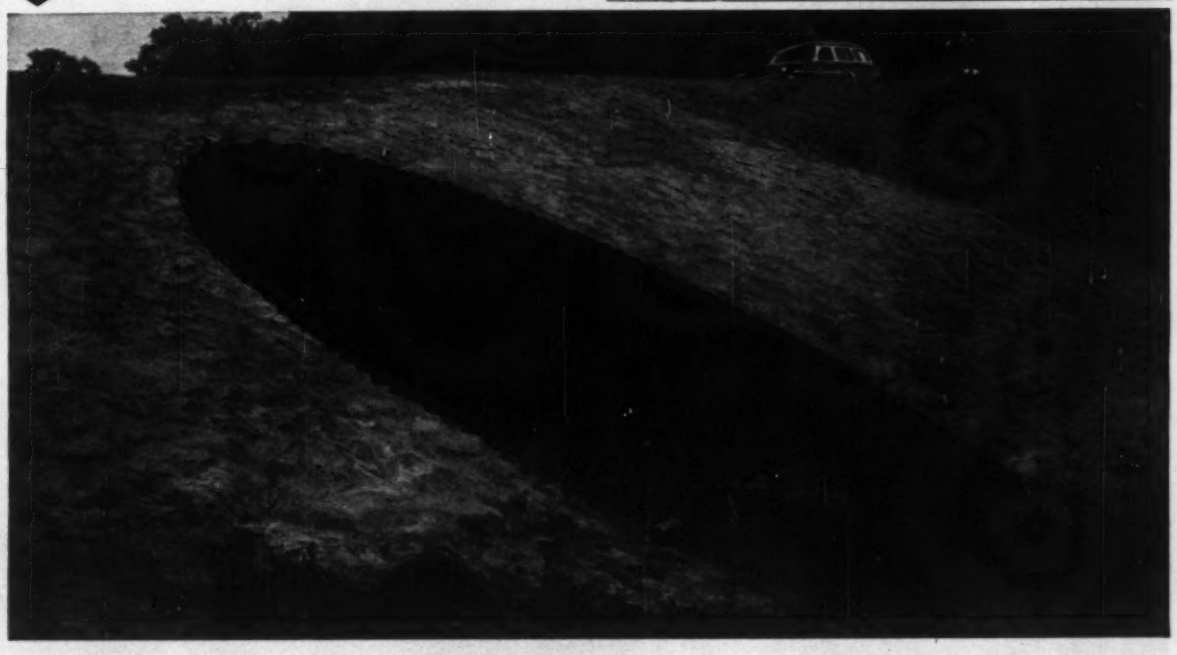
A group of Australian investors has studied similar resorts in the U. S. They are prepared to put up a $1.2 million bond to guarantee construction of the bridge within two years after they get a go-ahead on the development.

Kaiser-Perini-Morrison-Raymond are successful joint venturers on Australia's huge Snowy Mountains hydroelectric project. They also are interested in several other large construction projects.

This Armco Corrugated Metal Pipe, after assembly on the stream bank, is now ready for lifting with a crane and swinging into position.

Consulting Engineer: R. Kenneth Weeks, Engineers; Norfolk, Va.
Contractor: J. R. Houska Company, Norfolk, Va.

View of skewed end of the same Armco MULTI-PLATE Pipe, installed near Speight's Run Dam, that saved money for Portsmouth, Va. Pipe has been coated with asphalt.



"Armco MULTI-PLATE Pipe helped City of Portsmouth save $5,000"

So said Mr. X. D. Murden, Superintendent of the Water Department, Portsmouth, Virginia.

He was referring to an installation of Armco MULTI-PLATE® Pipe, 13 feet in diameter and 70 feet long, used in place of a conventional bridge in connection with a dam built to supply water for Portsmouth.

Original plans called for a steel beam bridge with concrete deck and abutments supported on timber piling. But after test piles were driven to unexpected depths, it was realized cost would be much more than planned. So the MULTI-PLATE Pipe was proposed by the engineers to effect considerable savings.

Armco Corrugated Metal Drainage Structures are being installed under expressways all over the country. They have a record of proved durability in both highway and industrial installations. Write us for factual data and prices. Armco Drainage & Metal Products, Inc., 6028 Curtis Street, Middletown, Ohio.

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The new Walt Whitman Bridge of the Delaware River Port Authority. Consulting Architects: Harbeson, Hough, Livingston and Larson, Philadelphia. Engineers: Modjeski & Masters-Ammann & Whitney.

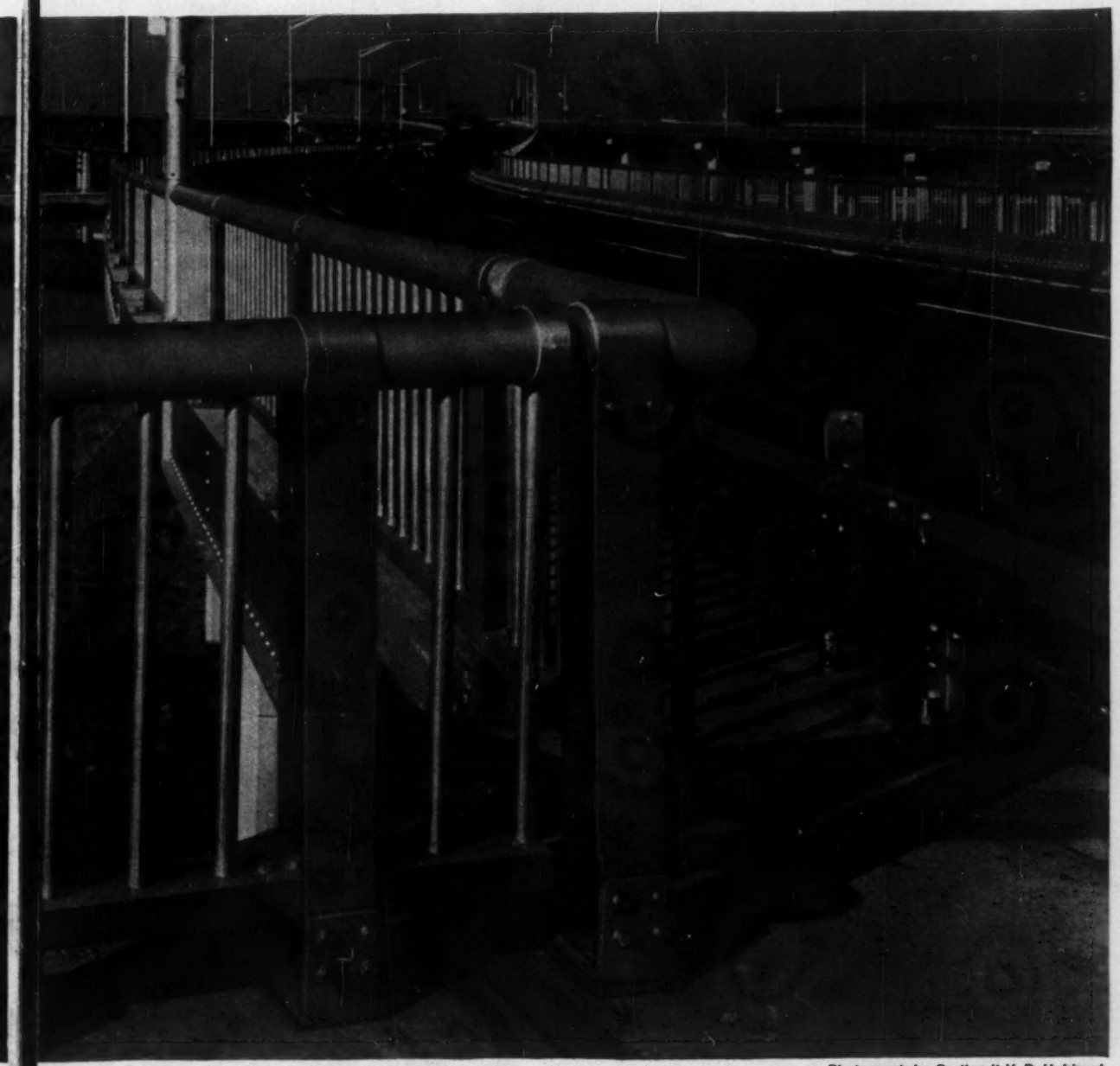
Photo taken during construction shows a two-man team installing prefabricated Flynn railing sections on the Walt Whitman Bridge. Work is clean, fast, easy—no need for heavy equipment or hoists.

NEW WALT WHITMAN BRIDGE:

Prefabricated Flynn railing cut days

The magnificent new Walt Whitman Bridge, reaching across the Delaware River between Philadelphia and Gloucester, N.J., has put Flynn first in bridge railing news again. To save erection time for the contractor, ten-foot-long sections of prefabricated Flynn post and rail were delivered direct to the job site, ready for fast, easy installation. With wrenches as their principal tool, a two-man-team put thousands of feet of this low-cost, lightweight aluminum railing in place—quickly, easily, and without power lifting equipment.

Years from now, these handsome Flynn extrusions will still be serving and saving money for the bridge authority. Because they can't rust, or rot, they'll never need painting or require costly maintenance.



Photograph by Cortlandt V. D. Hubbard

and dollars off construction costs

See this Walt Whitman Bridge railing in Flynn's free catalog. The baluster-type railing used on the Walt Whitman Bridge is one of many *standard designs* you'll find in Flynn's new bridge railing catalog. This valuable working tool contains details on dozens of "job-proven" profiles available to you for distinctive, low-cost bridge and highway construction. *For your free copy, write on your letterhead to Flynn's main office. Meanwhile, if you're planning a project at present, call the man from Flynn. He'll help you select the right railing, right away.*

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Problem: *How to drain the backed-up water in the ditch along this road? Farm is damaged by overflows during heavy rainstorms.*

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End roadside drainage problems with Wheeling Metal Culvert Pipe

A single, small-diameter Wheeling Corrugated Culvert Pipe disposes of backed-up water where access roads meet secondary roads.

Inexpensive to buy . . . light and easy to install . . . heavily galvanized to resist weather . . . Wheeling Metal Culverts save in initial cost and in maintenance cost. They have the flexibility needed to withstand shock of heavy loads and pressure from shifting fill.

Wheeling Metal Culvert Pipe or Pipe Arch, in copper-bearing steel or copper-bearing pure iron, plain galvanized or bituminous coated (with or without paved invert) is available in a wide range of gauges and diameters.

Contact your nearest Wheeling warehouse, culvert plant, or sales office. Wheeling Corrugating Company, Wheeling, West Virginia.

Large-diameter Wheeling Pipe—easily controls normal flow of fast-moving streams.

Wheeling Pipe Arch—a wide, comparatively flat-bottom type of corrugated metal pipe for use where headroom is limited.

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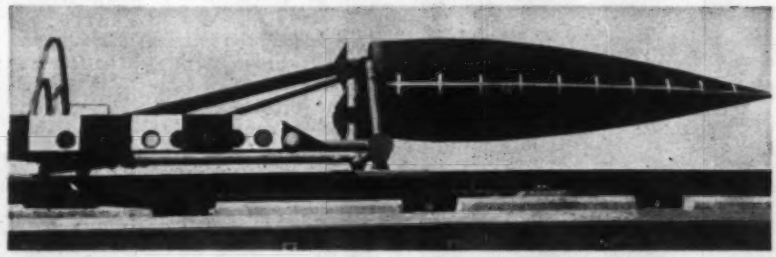
They built a "railroad" . . .



. . . For testing missiles

This Track Had to Be Straight

Three years ago Col. John P. Stapp became the "fastest man on earth" when he roared at 632 mph along the 3,500-ft test track at Holloman Air Force Missile Development Center in New Mexico.

That track has now been stretched to a 35,000-ft "railroad" in what was an extremely demanding construction job. Rail alignment had to be just about perfect. It required gages reading to within one thousandth of an inch.

An indication of the contractor's success was an Air Force announcement last month that it had sent a test vehicle along the track at 2,853 mph—about 4.8 times the speed of sound. That's believed to be the fastest a device ever traveled on the earth's surface.

The $5 million track uses 171 lb rail anchored to adjustable fixtures.

The alignment process began with a first order survey to locate 13 permanent monuments about 200 ft from the centerline of the test track and parallel to it. This was the basic reference used in aligning the foundation, the rail-carrying concrete girders and the rail-anchoring hardware.

Surveyors set bench marks at 100 ft intervals along the concrete girder under the "master" rail. They then marked a straight line on them.

The contractor set and aligned the master rail to within 0.005 in. of this line. The second rail was aligned to within 0.01 in. of the master rail.

Any variations from the horizontal or vertical alignment had to be within the tolerances and an arc of a circle with a diameter of no less than 1,000,000 ft.

Since temperature variations would vitiate the results obtained from optical instruments, the master rail was aligned at night.

• **Careful road bed construction**—The two-year job was finished just recently. Here's a step-by-step description:

Contractors first compacted the subgrade, removing unstable material in some spots and replacing it with soil capable of good compaction. There was a 39-ft cut at one spot and a major fill in one arroyo.

Workmen then put down a 10-in. concrete base slab and set reinforcing steel for concrete girders.

Girders and the trough between them were cast in special steel forms in 26-ft units. A total of 1,200 lin ft of these forms was used. The contractor transported concrete in truck-mixers from his nearby aggregate plant and leap-frogged the stripped steel forms forward.

He set hardware for anchoring and aligning each girder and aligned them on the original base line. This hardware permitted vertical and horizontal movement for exact setting of the rail.

Bethlehem Steel Company furnished the 171-lb, No. 1 rails. Each 39-ft rail was numbered serially when rolled then welded together in the same sequence.

• **Welding the rails**—The contractor built eight shacks astride the concrete girders. The following operations took place in assembly-line fashion: Cutting of rail ends; welding; forging; normalizing; hot shearing; hoisting; and successive grinding.

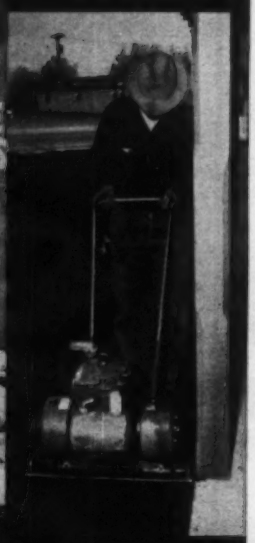
Thrusting clamps gripped the web of each rail in a specially built welding machine and forced the rail-ends together hydraulically with a total force of 49,000 lb (about 3,000 psi). During the welding process the two rails were upset about $\frac{1}{4}$ of an inch as they flowed together plastically under the sustained thrust of the clamps. Welding time averaged between seven and eight minutes.

A special jacking frame set the newly welded, still-plastic rails to proper alignment with lateral or vertical pressures.

The new weld was normalized for

ON ASPHALT—These pictures show the Barco Vibra-Tamp working on asphalt surfacing at an Arizona motel. It moves along, self-propelled, at a uniform rate with minimum effort required of operator.

built to handle MORE JOBS!



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Here's why users like the Barco VIBRA-TAMP:

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QUALITY CONSTRUCTION—Definitely superior value. Tough, rugged, dependable, and simple, yet precision-built for long life and freedom from maintenance. Comfortable operating handle.

ECONOMICAL—Low initial cost; low operating cost. Easy to move anywhere. No special tools required. Saves your bigger, costlier equipment. ORDER YOUR VIBRA-TAMP NOW. *Catalog No. 630 on request.*

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. . . Straight and Smooth

about 6 minutes at 1,550 F. In both the welding and normalizing operations the color of the glow indicated the temperature. The slightly oblique position of the rails during welding and normalizing was based on previous trial-and-error experience in similar operations, and as the rails cooled, they aligned perfectly.

The contractor controlled all rail construction operations from one shack. He connected a public address system to all other shacks to check completion of operations before moving the ribbon of steel forward 39 ft to add another length of rail. Average time between movements was 12 to 15 minutes.

• **Smoothing the surface**—The bulge produced by the up-setting of the rails was hot-sheared off to within ¼ of an inch of the original surface. Ball-grinding operations continued the removal of excess metal on welded joints. Belt sanders did the final grinding of the rail joint—finishing them to within 0.005 in. of adjacent rail surfaces.

The two finished ribbons of steel rolled on special rollers placed temporarily on the girders. Rails were welded in 10,000-ft lengths.

A 100-ton jack stressed the rails after they were positioned. The contractor obtained an elongation of each rail equivalent to the elongation of an unrestrained rail subjected to a temperature of 120F. Strain gages were installed on the rail at intervals to insure uniform stress. The friction of the rollers had to be considered in calculating the elongation and the differential force required.

Workers connected the first 10,000-ft section of rail to an anchorage and proper force was applied at the other end to obtain the required elongation. They then welded this end of the rail to another anchorage. Welders connected the following sections in the same manner.

• **Final alignment**—Final alignment of the rails was made from the brass caps or monuments that the contractor had installed at 100-ft intervals in one of the concrete track girders. The inside face of the master rail was aligned within the specified 0.005 in. of true alignment, as established by the brass caps. Maximum deviation from true elevation was also kept within the specified 0.01 in. of the alignment of the master rail.

Robert E. McKee, Gen. Contractor Inc., El Paso, Tex., was the constructor who worked to these tolerances. Ropp & Ropp of Los Angeles was the architect-engineer and the Corps of Engineers was the contracting agency for the Air Force.

Built-in optical plummets eliminate plumb bobs save set-up time...improve accuracy

Gurley OP-57

Gurley OP-137

The Gurley Optical Plummet Transit (Model OP-57) has proved itself to be such an important time and money saver in the field that this optical plummet feature has also been added to the Model 132 Standard Precise Transit. The new transit will be known as the OP-137.

Both these Optical Plummet Transits will save you time and trouble in setting over a point. The OP-57 and OP-137 eliminate the swing and sway of the cord and plummet—exasperating and time consuming. You will especially appreciate the increased accuracy on windy locations.

By rotating the instrument 180°, you can be assured of positive centering.

The Gurley Optical Plummet Transits are furnished with tripods which have built-in shifting heads. They allow a two-inch shift of instrument over the point, providing greater latitude in initial set-up.

Model OP-57 is recommended for very exacting work; the OP-137 for general engineering and construction work because of its shorter telescope, smaller size and its lighter weight.

Now in *two* models Gurley offers you an important advantage of the optical-reading theodolite *plus* the simplicity, ruggedness and proved performance of the American transit. *Write for new Bulletin OP-100.*

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One way: Box out shoulder along portland cement concrete

How to Upgrade Different Types

Delaware is a small state; only New England's Rhode Island is smaller. Yet it has the second largest growing county in the U.S., New Castle—only Florida's well-publicized Dade County is faster growing. Delaware has an area of 2,057 square miles and a population of 350,000. To serve it, the mid-Atlantic seaboard state has 4,000 miles of state road. There are no county roads.

These roads pretty well cover every part of the state. Therefore, except for some of its 45 miles of Interstate System roads, the state has generally ruled out the necessity for new route location.

Instead, Delaware is working to increase the traffic-carrying capacity of its existing roads to keep up with the state's growth. Here are some of the ways it is doing the job under programs started within the last five years.

Dirt Roads

The state has started a stabilization and surfacing program for its 1,600 miles of dirt road. The state legislature voted a $10 million package for this purpose in 1956. The money was good for 400-500 miles of road before it ran out. More money is expected to be voted.

The state highway department has to work with dirt roads 14 to 22 ft wide. It brings them all up to a minimum width of 20 ft—28- to 30-ft sections between ditches; then they're stabilized and surface treated.

The new roads should be good for five years with only touch-up jobs needed. After that time, a second full treatment results in a road that will go another 7 or 8 years.

Stabilization is done in four different ways: with asphalt emulsion; with soil cement; with sodium chloride; and with calcium chloride. The last two are more in the nature of experiments for Delaware, although they have been used elsewhere.

• **Asphalt**—Some 90% of all dirt road stabilization has been and is being done with asphalt. This gives a less expensive but good road for relatively light traffic. Costs run roughly $16,000 to $17,000 a mile.

Four man teams of state engineers check out about 10 miles of old road a day. They note what must be done: where drainage, pipes, structures and others must go. After all grubbing, clearing and grading is finished, the road is stabilized at the rate of about a mile a day.

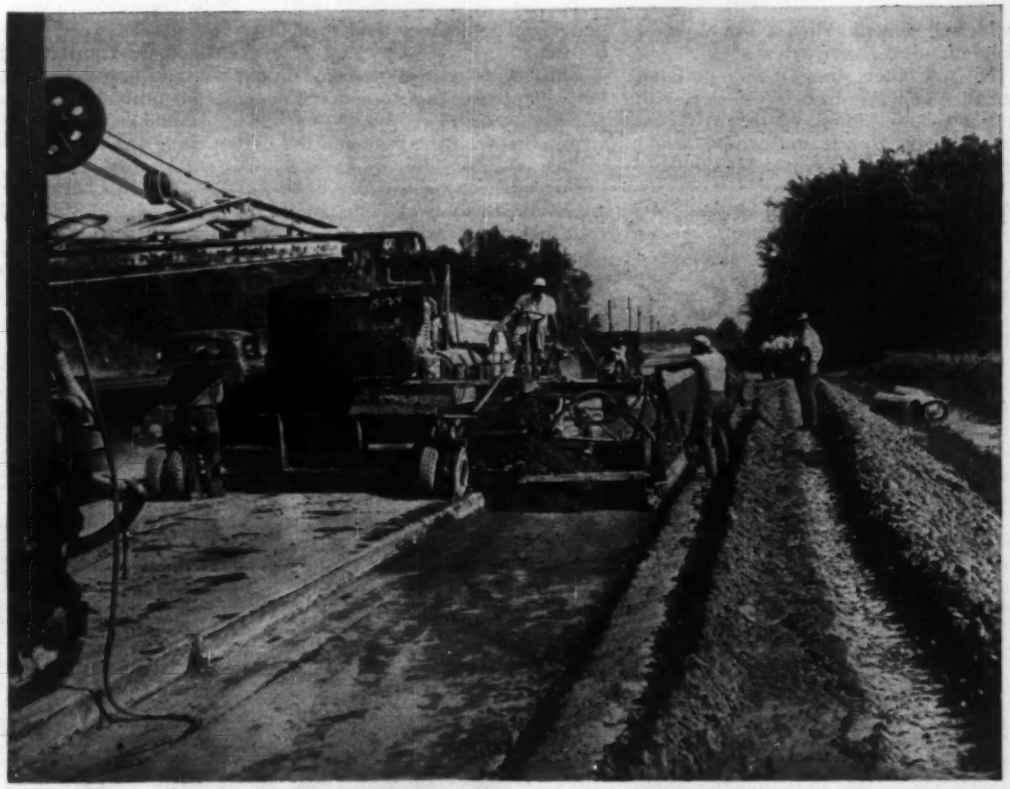
Most common method is to mix in two gallons of asphalt emulsion to the square yard so the road is stabilized to a depth of 4 in. After rolling and grading to final shape and curing from 5 to 10 days, two seal coats are put on. These usually consist of asphalt and chips, and go in at the rate of two miles a day.

• **Soil Cement**—For the more heavily traveled roads, soil cement stabilization is used. This is more expensive, but gives an excellent road. Cost here is about $20,000 a mile.

The road is stabilized to a depth of 5 in. with 8% portland cement. It is then surface coated in the same way as the asphalt-stabilized road. (The finished roads all look alike no matter what kind of stabilization is used.)

When a very heavily traveled dirt

roads . . .



Add more width with a slip-form paver and . . .

Of Roads

road is hit, soil cement stabilization topped by a hot mix bituminous concrete surface is used.

Sodium Chloride and Calcium Chloride stabilized roads are experiments, as previously noted. They have not been in place long enough to make a proper evaluation.

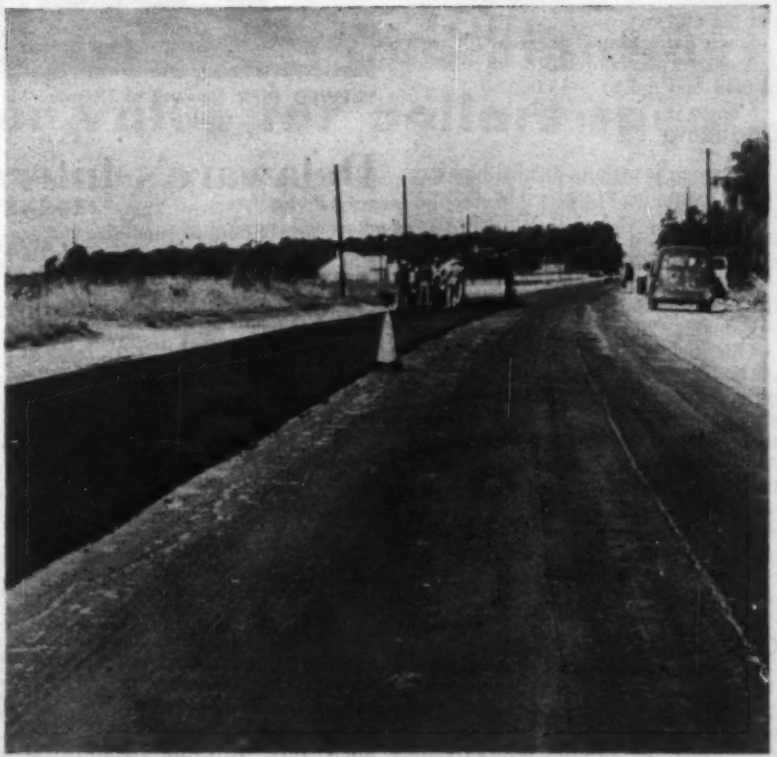
One-Lane Concete Roads

The state has a lot of 9-ft-wide portland cement concrete routes that force opposing traffic to run off the roadway to pass. As part of a drive to do away with all single lane roads in the state, the highway department is widening these to 24 ft. Some 42 miles have been finished to date.

Widening such roads also is done in a number of ways.

In one case, more road width is put in by compacting select borrow. Then, over this and the existing portland cement concrete lane, goes a surface coat of asphalt and chips. Result is a new, smooth, two 12-ft-lanes road able to take opposing traffic.

In other cases, the new width is made



Surface old and new pavement with bituminous concrete.

with soil cement. Then a 3-in. layer of bituminous concrete covers all.

In still others, the 9-ft-wide portland cement concrete lane is widened with asphalt stabilization and the 24 ft surfaced with asphalt and chips. Eight miles on one such job cost $184,000.

Two-Lane Concrete Roads

Delaware also has two-lane roads, made of portland cement concrete, only 18 ft wide. It is bringing these up to the modern standards of two 12-ft-wide lanes for a 24-ft-wide road.

The method here is to use a grader with a box-out attachment to dig out the shoulder along one side and clean up against the edge of the existing slab. This slab is usually 8 in. thick. All bad spots in the slab are cut out and patched with more portland cement concrete.

Then, using a slipform paver, a 6-ft-wide strip of portland cement concrete is put in along the exposed edge of the slab. No construction joints are used between the new strip and the old slab. Nor are any contraction joints sawed into the new strip. However, the new strip hasn't suffered.

The additional width of road is cured, using polyethylene sheets for cover. Then an asphalt tack coat is put over the old and new concrete surface. After that a base course and a wearing course are laid down to make a 3-in.-thick bituminous concrete surface over both the old and new.

Some indication of the cost for such widening is one contract for seven miles of road that ran to $433,000.

Dualizing

Delaware is making divided highways of its main route roads. The highway department takes a 24-ft roadway, keeps it for traffic in one direction, adds a median strip to one side, then puts in another 24-ft roadway for opposing traffic. This produces a four-lane divided —or dual, as Delaware calls it—highway.

One such job is Route 2, which connects the cities of Newark and Wilmington, two industrial centers. Widening and dividing this heavily traveled route has been going on for some time. And a lot of time, money and effort is being saved in the modernization. For when the original road was put in decades ago, someone was farsighted enough to make all structures so wide that they need not be touched in the new program.

Cheaper Utility Relocation

One big problem in the state's programs is utility relocation. In most cases reimbursement is not allowed. And while the utilities are agreeable and cooperative, they are short on manpower and sometimes tend to hold up the job.

This bottleneck was overcome on one job where relocation turned out to be fast and cheap. This was a cooperative venture between the state and the City of Newark.

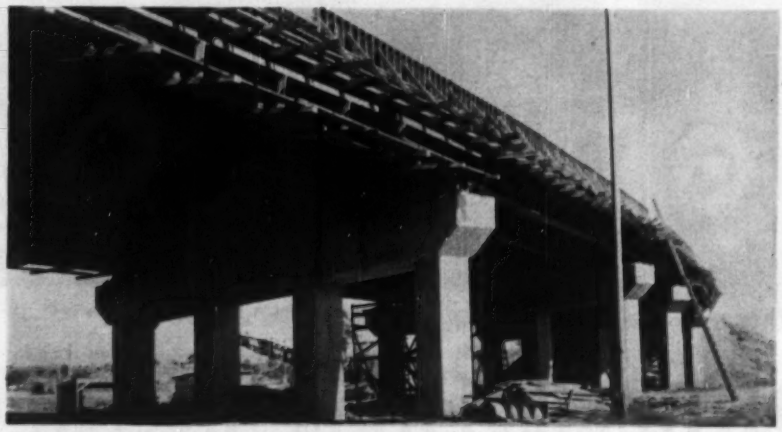
Two miles of highway had to be widened from 18 to 24 ft. The part of the road that ran through the city was widened to 44 ft from curb to curb.

The contract awarded to John Julian Construction Co., Elsmere, Del., included utility relocation as well as widening and surfacing. The contractor worked drainage and utilities at the same time. The result was a faster, cheaper job than it would have been had the city let the relocation separately, as it normally does.

Double work was eliminated. Under separate contracts, the road probably would have been ripped up, to relocate the utilities, and repatched. Then the second contractor would have come along and ripped up the road again for his part of the job.

Another advantage in giving Julian both phases: the road was not held up while a separate force did the relocating. In this case, public utilities were involved. But it worked so well that private utilities have shown interest and the state is looking to try it some more.

Richard A. Haber is chief engineer for the state highway department, which also has mosquito control and beach erosion control, among other odds and ends, under its aegis. Construction engineer is Lester W. Noivnger.



SKEWED PIER approach to Delaware Memorial Bridge is part of . . .

Delaware's Interstate System

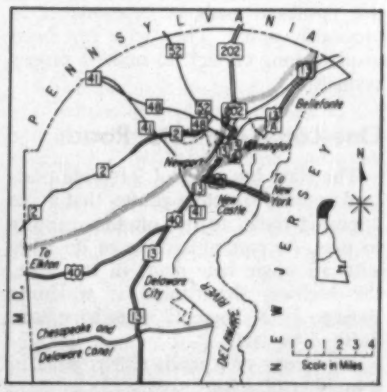
Because of both its small size and geographical location, Delaware is the state with the smallest share of the Federal Interstate Highway System. Planned interstate mileage in the state is about 45 miles. Cost is estimated at $203 million.

The roads are all located in New Castle County, which is the northern third of the state. They make connections to Maryland on the west, Pennsylvania to the north and east across the Delaware Memorial Bridge to New Jersey.

Construction involves converting old roads to interstate standards and building new roads to meet the standards.

There are now four contracts active that include paving, approaches and overpasses in the Delaware Memorial Bridge area.

The hub of the interstate system in Delaware will be the Christina River interchange. It is expected to cost $20 million. Over 6.5 million cu yd of earth will have to be moved and the river relocated and shortened by two miles. The interchange will be the equivalent of 16 miles of two-lane roadway. Twelve bridges will be included.



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Highway planning and design level thinking should not only be based on the initial cost of new highways, but on the over-all lifetime costs. In fact, we should be sure we are not being "penny wise" and "pound foolish" by looking only at initial costs, but let's build highways that will provide a greater and more economical service lifetime. Plan now, at the design level, to reduce these massive yearly maintenance costs by designing modern, properly jointed highways that will provide maximum service with a minimum maintenance expense. Remember, every saving realized through reduced maintenance, will provide added miles of highways for the same expenditure of public funds.

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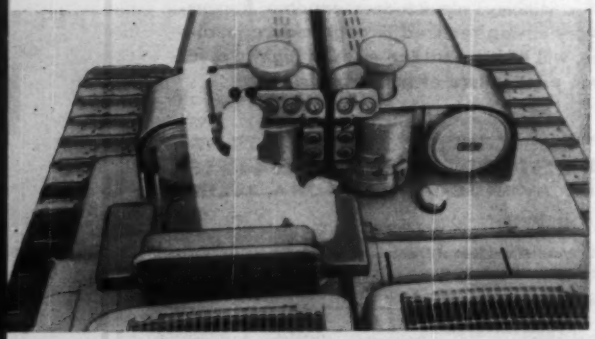

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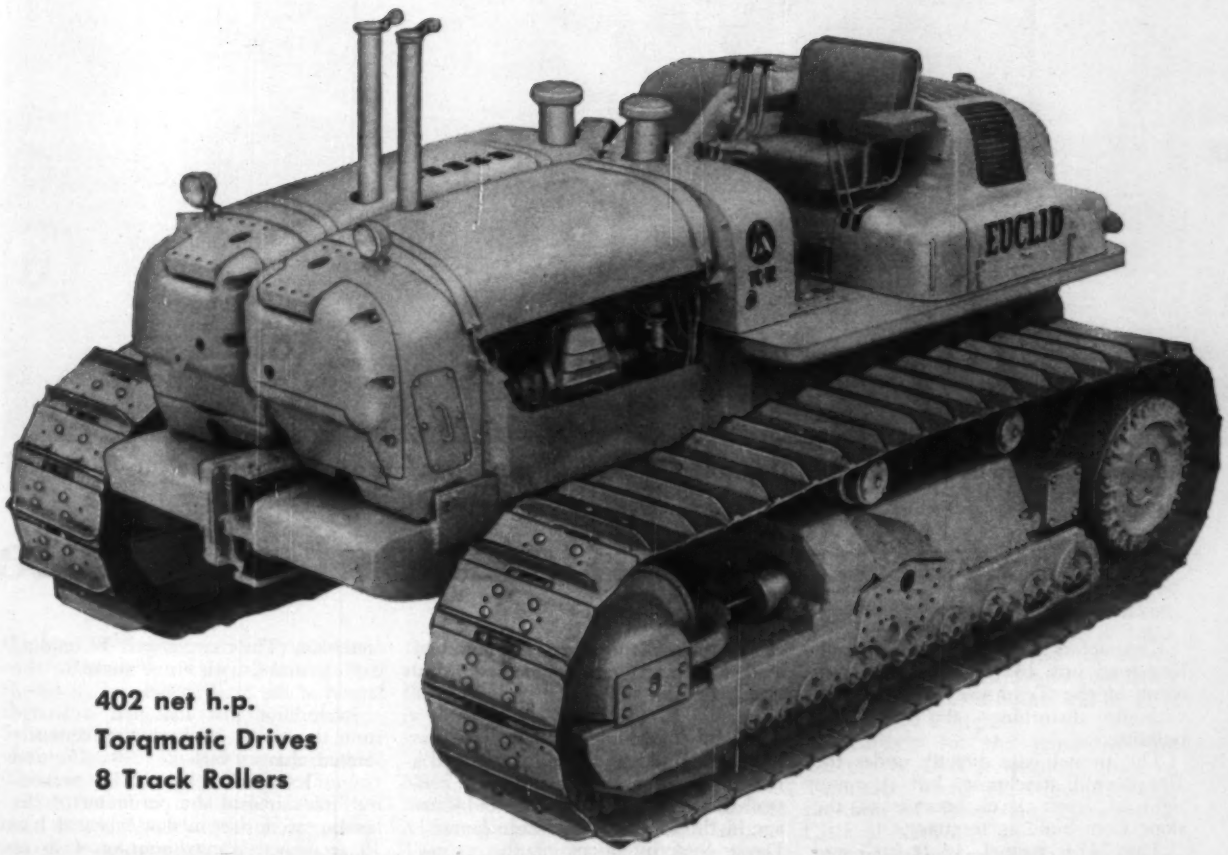

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Tennessee's classic, 100-year-old Capitol remains undisturbed while underneath it . . .

Dynamiters Blast Out a Tunnel

Contractors blasted a tunnel through limestone just 13 ft below the basement of the Tennessee State Capitol without disturbing the venerable building.

The tunnel cuts directly under the 100-year-old statehouse, but it opens right at street level because of the slope from building to street.

The 242-ft tunnel, 14 ft high and 14 ft 9 in. wide, will provide a street-level entrance to two elevators at a new subbasement level, eliminating a 103-step climb from the street up to the legislature floor.

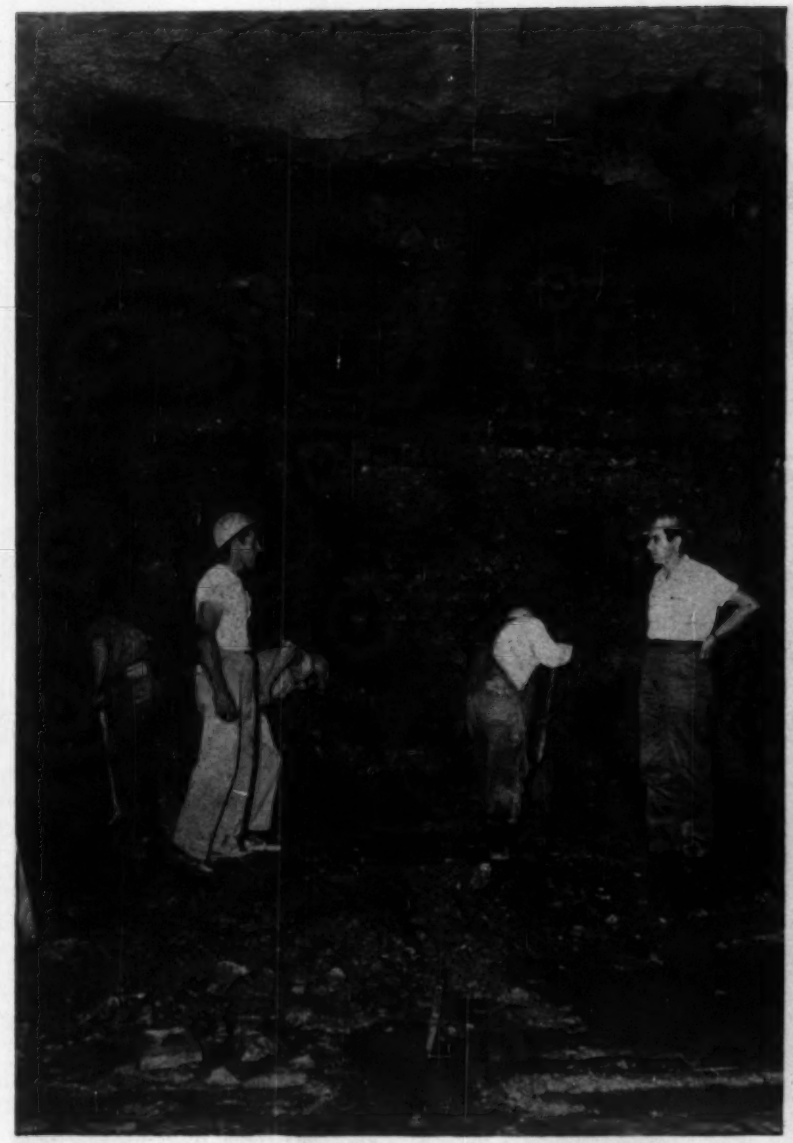
The tunnels and elevators are part of a $4 million restoration and modernization program.

• **Careful blasting**—Tunneling in the limestone under the Capitol required a carefully planned and precisely controlled blasting program to avoid damage in the building overhead. James I. Davis, Superintendent of the excavation project, developed a drilling pattern of 64 holes for the face of the tunnel heading.

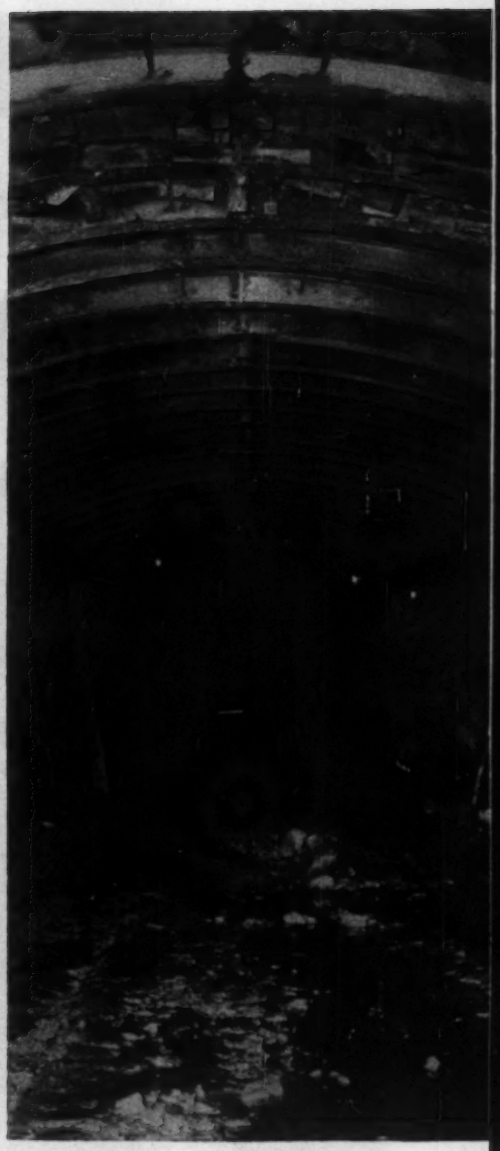
A total charge of 55 lb of dynamite (60% gelatin) was used for each full face blast. The charges were 1¼-in.-dia., 0.45-lb sticks, with three sticks in the largest of the heading holes.

Each shot first loosened a wedge from the center by exploding centrally located charges with 25-, 50-, 75-, and 100-millesecond delays. The remaining holes around the perimeter of the heading were shot in slow relays of 1 to 10 seconds. A maximum of 4 lb of explosive was used in each delay. The heading was advanced about 4 ft with each shot.

While the contractor was blasting directly beneath the Capitol steps at



This drill pattern reduces shock of tunnel blasting.



Roof beams rest on solid rock.

. . . But Delicately

the start of the excavation, concussion was further reduced by advancing the tunnel in two stages; first the bottom, then the top half of the heading. Seismographic readings taken as the work progressed showed no appreciable vibration within the building.

The tunnel aims straight down the main street. A safety door at the portal served two purposes by containing shattered rock and by preventing the sound of the blasting from shooting into the center of downtown Nashville.

Blasting started in April on a one-shift, five-day week basis. Increasing the work rate to first two, then three shifts per day allowed completion of the tunneling before the end of June. A total of 2,300 cu yds of materials were removed in the process.

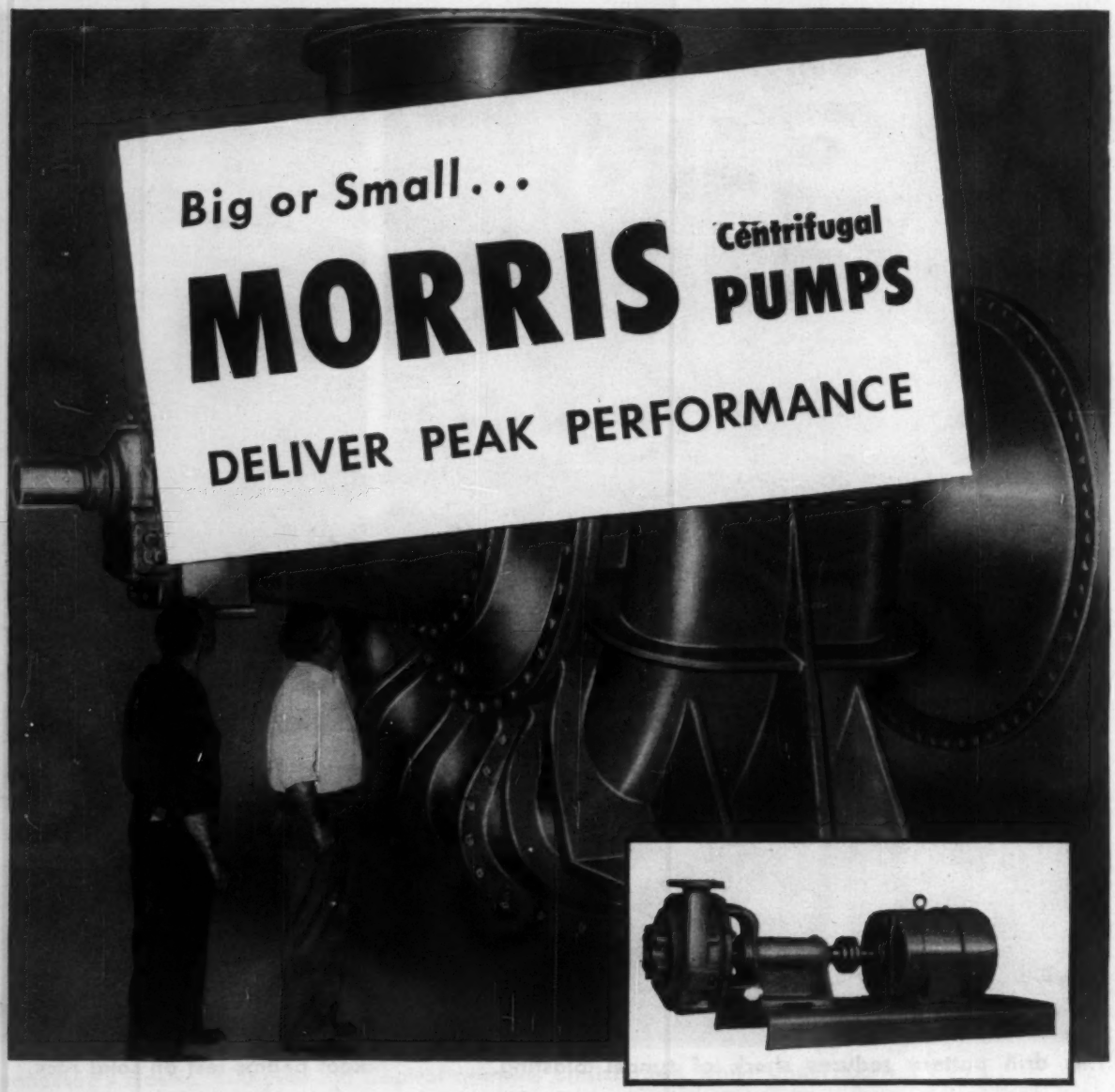
The roof is supported by curved 8WF31 steel arch ribs designed and furnished by the Commercial Shearing & Stamping Co., Youngstown, Ohio. Two segments, just over 9 ft long, form each complete rib. These arches rest in niches cut into the rock at the spring line. They are spaced 3 ft apart with ¾-in. tie rods. Lagging was used in the arch where necessary.

The ribs will be incorporated into a 12-in. concrete lining of the roof and walls. Finished walls and floor will be lined with marble on clay tile backup.

A hung acoustic tile ceiling will provide space between it and the curved arched roof for heating and ventilating ducts. The finished tunnel will be 11 ft wide and 10 ft high.

Architects for the renovation are Clayton B. Delke, Architect, State of Tennessee; Victor H. Stromquist; and the firm of Woolwine, Harwood & Clark of Nashville.

Structural engineer is Ross H. Bryan. William B. Smotherman is superintendent for Rock City Construction Co. of Nashville, the general contractor. W. L. Hailey & Company is the tunneling contractor.



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Half a precast concrete bridge, with temporary guys, goes out on trestles extending from shore.

Moscow Bridge Rolled to Midstream . . .

It's barged to the site. Second half (on shore behind the first) is moved alongside the same way.

. . . and Floated onto Foundations

Russian bridgebuilders used unusual methods to build a combination subway and four-lane highway bridge across the Moscow River.

Workers assembled two complete precast concrete arch structures on shore. While the first was being rolled to midstream and floated into place on barges, the second was being constructed. Then it too was rolled and floated to its place alongside the first. The parallel sections have 354-ft center spans.

While crews on shore built half the superstructure at a time, foundation work went ahead in midstream.

The first assembly was rolled out into midstream on tracks laid over timber-pile trestles. Steel towers and suspension cables supported the cantilevered ends of the span temporarily. These supports were later removed after the bridge section finally rested on its foundations.

(Continued on page 62)

The 5,600-ton section was floated into position on 248 water-ballasted pontoons and lowered into place by pumping water into the pontoons.

The second section of the bridge was floated into place in the same way.

The two sections form a double-level bridge connecting the growing southwest part of Moscow with the center of the city (ENR Aug. 14, p. 54). A four-lane, high-level roadway will cross the top of the bridge arches. A subway will run on the lower level. Pedestrian walks are cantilevered from both sides of the bridge.

Asphalt Association Holds Paris Meeting

Techniques and new applications of asphalt were the subjects of the third International Asphalt Congress held in Paris last month by the International Association for Asphalt.

Three hundred delegates from twelve countries attended the Congress, including for the first time two from the U. S. A. These were R. O. Wilson, manager of the Asphalt Division of Cosden Petroleum Corp., Texas, former chairman of the Board of the Asphalt Institute of Maryland, and John M. Griffith, Research Engineer of the Institute.

The Congress was exclusively devoted to technical aspects of the asphalt industry. Subjects covered by papers included thermal insulation of boiler rooms, treatment of railroad roadbeds with asphalt, surfacings with cold asphalt powder that withstand solvent action of fuels and lubrications, development of mastic asphalt road surfacings in Germany, and use of colored asphalt in the streets of Cannes, France.

Delegates to the Congress were all technicians, representing oil refiners, asphalt producers, contractors, scientific organizations and government road authorities. Countries which sent delegates were Belgium, Denmark, France, Germany, Great Britian, Holland, Italy, Norway, South Africa, Spain, Switzerland and the United States.

France's Sahara Pipeline To Be Open By Next Fall

Oil from France's new fields in the Sahara Desert will be flowing in a 24-in. pipeline to the port of Bougie, Algeria on the Mediterranean by the Fall of 1959, according to plans.

Construction of the 410 mile line and its four pumping stations is now under way. It is estimated that the line will carry 4 million tons of oil during the first year, and 10 million tons three years later.

Galvanized Panels Enclose Mexico City Building

A 14-story office building in Mexico City, is enclosed with painted, galvanized sheet-steel panels on one side and parts of both ends. Thin aluminum curtain-wall construction is used on the other side.

Engineers were looking for two things when they picked the curtain-wall design: speed of erection and earthquake stability.

The box-patterned steel panels are hung on steel girts and mullions attached to the buildings steel frame. The designers even covered with the galvanized panels a portion of the building that is walled with brick

Sandwich panel construction of the curtain wall units includes an insulation layer behind the galvanized metal skin, with fiberboard backing and a plastic coating on the inside face of the panels.

The building, called Edificio Lafragua, will cost $1.5 million. It has concrete floors supported on open-web steel joists. Ceilings hung from the joists are perforated sheet-metal panels with glass-fiber acoustical backing.

The final design was developed from a study made with the government owned steel company, Altos Hornos. Felix Sanches and Raul Izquierdo are the architects. Over-all engineering work is handled by Ing. Rafeal Cortina; Ing. Herberto Castillo and Ing. Leopoldo Rodriguez of Cia. Desenos Estrustural did the structural engineering. Steel framework was fabricated by Cia. Fundidora de Fierro y Acerode. Banco Nacional Hipotecario, the main shareholding owner, will occupy the first five floors of the building.

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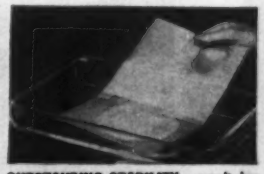

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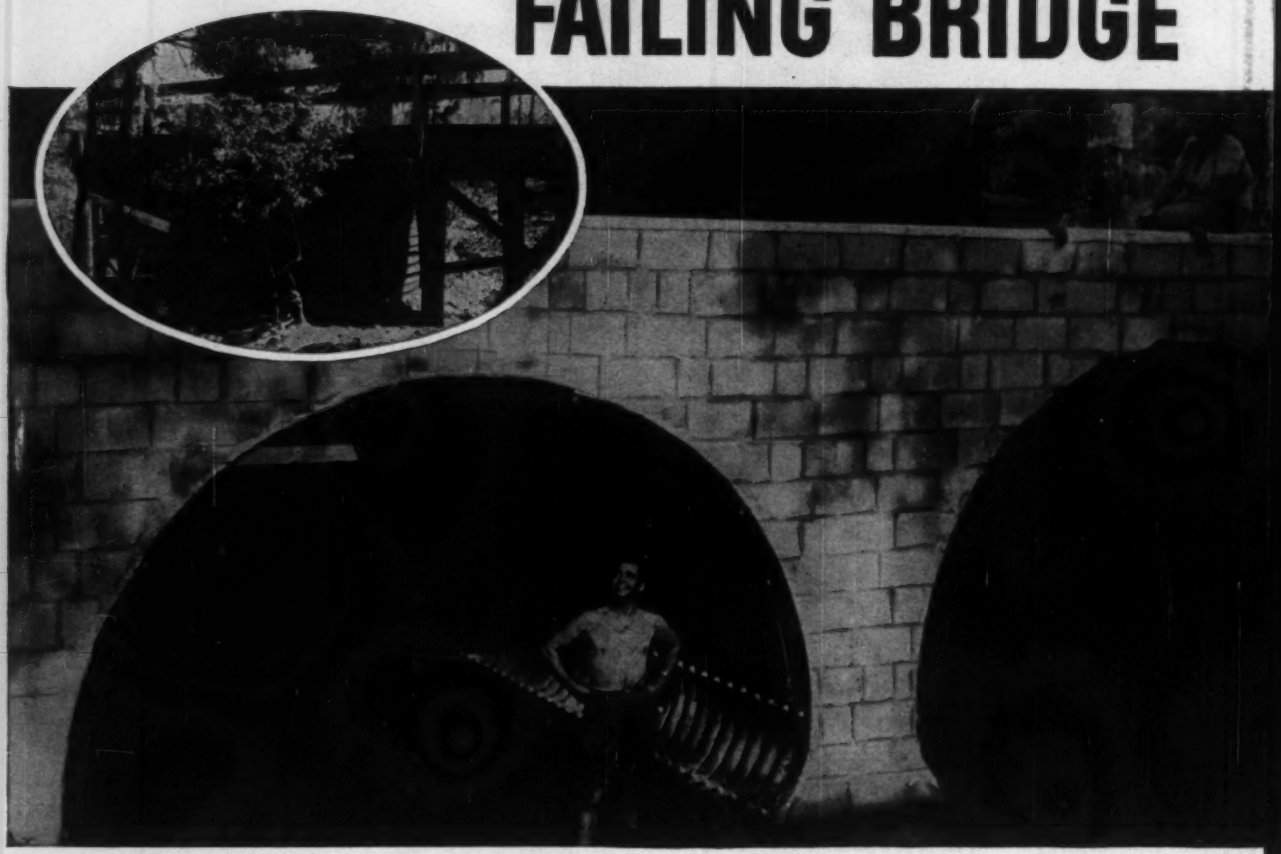

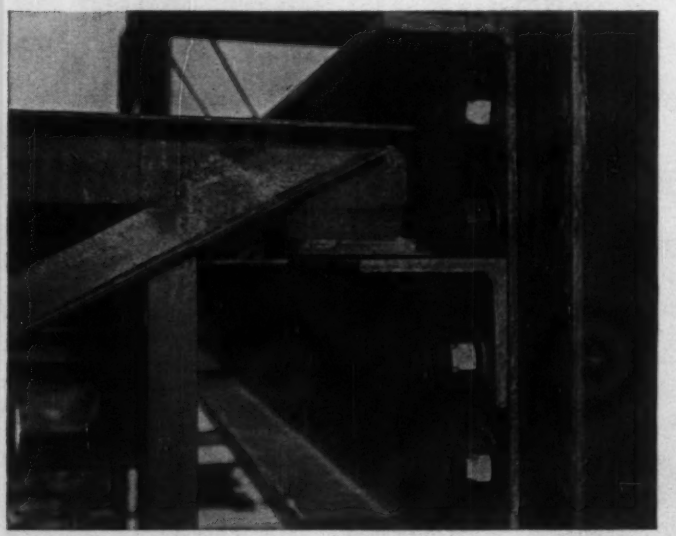

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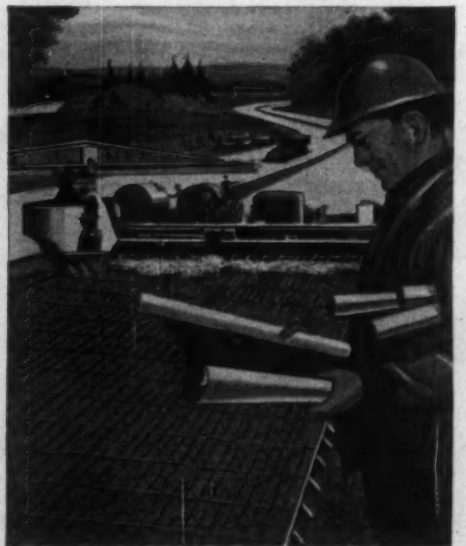

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using Republic Sectional Plate Pipe-Arch

Minimum "road closed" time was a major consideration when a failing bridge on King's Road, Hillsborough County, Florida, required replacement. Use of Republic Sectional Plate Pipe-Arch provided the perfect answer, plus maximum initial and long-term economy.

First, the old bridge was torn out and the creek diverted through a temporary corrugated metal pipe. Next, with simple foundation work completed, twin Republic Sectional Plate Pipe-Arches were quickly and easily erected. Each asphalt-coated pipe bridged a 12-foot 10-inch span, with an 8-foot 4-inch rise. Finally, headwalls and backfilling were completed, road surfaced —and the new bridge opened to traffic just three days after work had begun!

Beyond major time- and money-savings during installation, the Republic Sectional Plate Pipe-Arch Bridge will continue to pay dividends in years of trouble-free service. It won't crack, crumble, or spall under impact, vibration, or shifting fill. Maintenance, beyond that required on any normal stretch of highway, is eliminated.

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Memphis, Tenn. • Birmingham, Ala.

Dominion Culvert & Metal Corp.
Roanoke, Va.

Eaton Metal Products Corp.
Omaha, Neb. • Hutchinson, Kan.

Eaton Metal Products Company
Billings, Mont.

Empire State Culvert Corp.
Groton, N. Y.

Illinois Corrugated Culvert Co.
Peoria, Ill.

Jensen Bridge & Supply Company
Sandusky, Mich.

H. V. Johnston Culvert Co.
Minneapolis, Minn. • Aberdeen, S. D.

Logansport Metal Culvert Co.
Logansport, Ind.

M & M Hiway Materials Co.
Columbia, Mo.

North Dakota Metal Culvert Co.
Fargo, N. D.

Northeastern Culvert Corp.
Westminster Station, Vermont

Pacific Corrugated Culvert Co.
Temple City, Calif.

The Pedlar People, Ltd.
Oshawa, Ont.

Republic Steel Corporation
Culvert Division
Canton, Ohio • Harrisburg, Pa.
Charlotte, N. C. • Hammond, Ind.

Spokane Culvert & Fabricating Co.
Spokane, Wash.

Thompson Pipe & Steel Company
Denver, Colo.

Tri-State Culvert & Mfg. Div.
Florida Steel Corp.
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Utah Culvert Company
Ogden, Utah

Wisconsin Culvert Company
Madison, Wis.

Wyatt Metal & Boiler Works
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Delivers rated capacity at 1100 rpm —slowest speed rotary on the market!

You'll get new economy of operation — cheaper air — lower fuel and parts bills when you use the new Le Roi 365 Rotary for air power. That's because this brand new rotary loafs along at only 1100 rpm while delivering full rated 365 cfm at 110 psi. The results: Less wear and tear on the compressor, less frequent vane replacement—and a miser's grip on the fuel line!

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PC-901

LE ROI Division of Westinghouse Air Brake Co., Milwaukee 1, Wisconsin, manufacturers of Newmatic air tools; stationary, portable and Tractair® air compressors. Write us for information on any of these products.

Data on Rubber Bridge Bearings

Though neoprene, a synthetic rubber, has been used for bearings in short-span bridges in the U.S., few tests have been made to produce sufficient data to set up design criteria. Data were needed on the resistance of elastomers to shear loads while under compression.

To remedy this shortcoming, evaluation tests of elastomeric bridge bearings were conducted by Charles A. Maguire and Associates, consulting engineers of Providence and Boston, in cooperation with the Division of Roads and Bridges of the Rhode Island Department of Public Works.

Measurements of vertical deflections in the tests indicate:

Deflection increases inversely with durometer (hardness) ratings.

The ratio of deflection to thickness increases with bearing thickness.

Shape has little effect on compressive resistance.

Deflection increases with time and dynamic loading.

Horizontal shear tests lead to these conclusions:

Compressive load has little effect on shear resistance.

Resistance to angular shear distortion increases with thickness.

Resistance to shear distortion increases with stiffness.

Dynamic creep of vertical deflections resulted from an alternating horizontal loading. A test indicated that an additional 50% deflection is maximum for an indefinite period.

The researchers recommend additional tests for fatigue creep and temperature effects on compressive and shear distortions.

Elastomeric bearings are being tried as a low-cost way of supporting short-span bridge beams. They not only provide uniform transfer of beam reaction to the substructure but also permit rotation of beam ends and expansion and contraction with temperature change (ENR May 16, 1957, p. 67).

Paper Sandbag Developed As Substitute For Jute

The U. S. Army Engineer Research and Development Laboratories, Fort Belvoir, Va., has developed a knitted paper sandbag as a substitute for the standard jute bag. It is intended for use only if normal supplies of jute, mostly imported from the South Pacific area, are cut off.

The paper bag, either wet or dry, equals the jute bag in strength. It also stacks and handles satisfactorily. The paper mesh holds fill material well except when a fine sand is used. However, the mesh can be made as fine as needed.

The bag is classified as a 60-day product under the most severe weathering and can last six months under normal conditions. It is comparable in price to the jute sandbag.

The Cellucord Corp., Gilman, Vt., supplied the paper bags to the Engineers for the development program.

Research Needs a Push, Architects Are Told

Research in the construction industry is being neglected. That's what Christopher E. Barthel, Jr., assistant director of Armour Research Foundation told the Pennsylvania Society of Architects.

Mr. Barthel says the construction industry is spending less than 0.5% of its total income for research and development, a very slim amount compared with other industries. He points to advances in the use of adhesives and sealants and to new developments in metallurgy as examples of what architects are passing by in present-day design.

"Technology has an explosive quality, and it is making our world more complex day by day," Mr. Barthel says. "Up to the present, architects have been able to apply knowledge gathered by others, but they will find it more difficult to assimilate information developed by others unless they make a constant effort to research their own problems."

Research Points the Way To Wider Use of Brick

New products and new applications growing out of research will greatly expand the masonry industry during the coming years Douglas Whitlock told the 20th biennial convention of the Bricklayers, Masons & Plasterers International Union at Atlantic City, N. J.

Mr. Whitlock, chairman of the board, Structural Clay Products Institute, pointed to such advances as lightweight clay products, new methods of brick packaging and prefabricated brick panels in emphasizing the growing need for masonry products.

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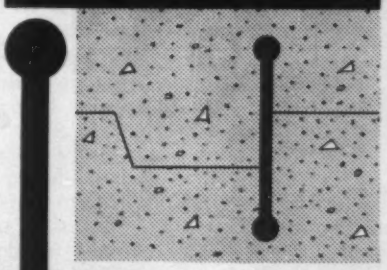


RUBBER or VINYL

Williams Efficiency Waterstops are made from Natural Rubber Stock, and designed for maximum effectiveness in any type of cast-in-place construction joint. They will bend around corners—will not crack or tear from shear action. Tensile Test: 3990 lbs.; Elongation Test: 650%. Available in rolls up to 80 feet in length. Field splicing is simple. Williams Waterstops can also be furnished in Vinyl or Neoprene for industrial uses where resistance to oil and other injurious wastes is desirable. These highly effective Waterstops are now in use in hundreds of industrial plants, commercial and public buildings throughout the country.

See Sweet's, or Write for Information.

WILLIAMS
EQUIPMENT and SUPPLY CO.
456 W. Eight Mile Rd., Hazel Park, Mich.

New 4-D Wrought Iron combines workability with increased corrosion resistance in these highway services

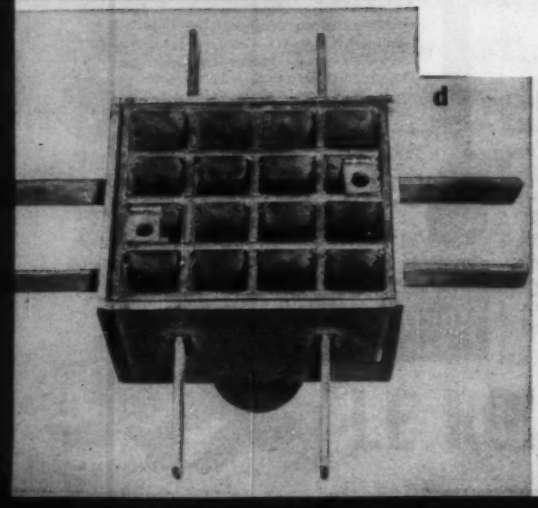
a 4-D Wrought Iron railings offer high impact resistance because of their great structural strength. Easy to work and easy to weld, 4-D Wrought Iron railings stand up well in corrosive atmospheres.

b 4-D Wrought Iron drainage lines assure uninterrupted service—so essential in keeping high-speed traffic lanes open. No costly maintenance or repairs with this durable piping material on the job.

c 4-D Wrought Iron snow-melting systems like the one on this bridge ramp, combine corrosion resistance with rugged strength, low coefficient of expansion with concrete, and easy fabrication properties.

d 4-D Wrought Iron scuppers serve as low-cost catch basins in bridge drainage systems. Cindering and salting and alternating wet and dry conditions have proved relatively harmless to this rugged material.

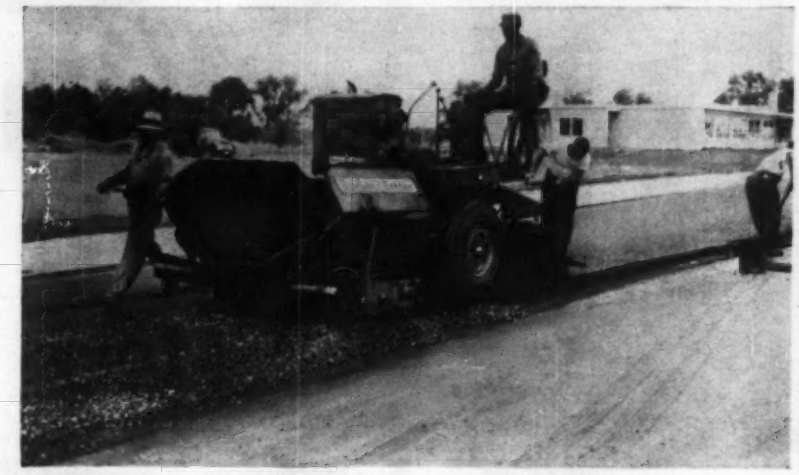
e 4-D Wrought Iron curbing preserves concrete against icing salts, brine slush, drainage water and corrosive atmospheres. 4-D Wrought Iron's resistance to corrosion stems from a unique structure of glasslike iron silicate fibers. Write for booklet, *Wrought Iron in Highway Construction.* A. M. Byers Company, Clark Building, Pittsburgh 22, Pennsylvania.



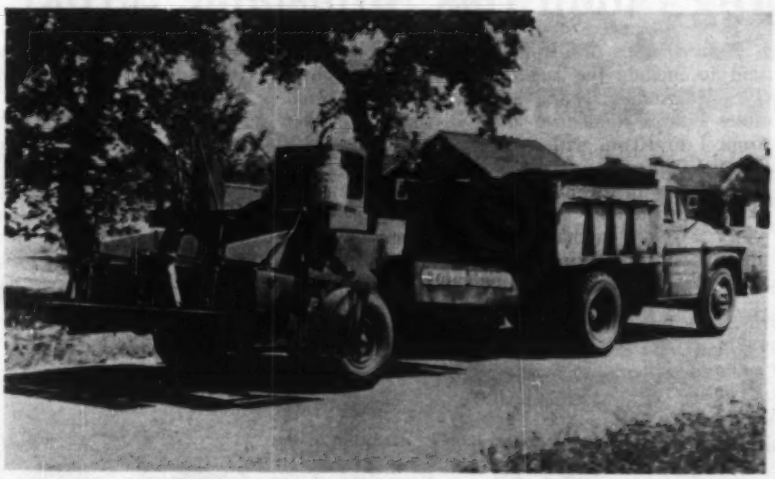
BYERS 4-D WROUGHT IRON

TUBULAR AND FLAT ROLLED PRODUCTS

Corrosion costs you more than Wrought Iron



CRAWLERS give paver high floatation and traction . . .



RUBBER-TIRED WHEELS give it high-speed job-to-job mobility

Pave and Run Is Its Forte

Barber-Greene's Model 873 asphalt finisher paves on crawlers for maximum traction at minimum pressure—then pushes itself up on to rubber-tired wheels for towing at high speeds from job to job.

The company calls this a wholly new concept in asphalt pavers, fashioned to fill the needs of small-job work. This includes driveways, parking lots and filling station in addition to paving shoulders along highways, turnout paving and construction of acceleration and deceleration lanes.

The nature of such jobs often forces the paver to work on unstable, soft or recently primed bases. Crawler mounting is essential to insure maximum traction with minimum pressure.

Small jobs also mean that frequent move must be made during the working day. Thus the desirability of rubber-tired wheels for high-speed travel.

The 873 lays asphalt in widths from 6 to 12 ft, in 3-in. increments. It offers the same tamping, leveling and thickness control principles that are present in the company's larger finisher, the manufacturer says.

When ready to move, the machine raises itself on to power-operated, hydraulically retractable, pneumatic wheels, putting the crawlers free of the ground. A towing tongue that can be attached or detached in seconds is then hitched to any light truck and the unit is sped off to the next job. BARBER-GREENE CO., AURORA, ILL.

Electronic Device Cuts Computer Conversion Time

Time needed to convert surveying and mapping data into cmputer form can be reduced with the aid of an electronic device—the Terrain Data Translator.

The TDT automatically translates terrain measurements from an aerial stereo photo to digital data, ready for direct input to the computer.

A two-dimensional map of a photo is drawn with a tracing table. The map is scaled and oriented to the photo; a dot of light on the plotting table is made to follow the ground line on a pair of photos.

Two axis output is produced on paper tape, punched cards or remote control typewriter.

As a safeguard against human error, the TDT limits the principal function of the operator to setting the floating mark on the ground at points along the selected profile or cross-section. Station number, distance in feet left and right from centerline, and elevation of individual points are all automatically recorded in digital form when the record button is depressed. BENSON-LEHNER CORP., 11930 W. OLYMPIC, LOS ANGELES, CALIF.

Triaxial Soil Machine For Controlled Testing

A new line of machines for stress-controlled triaxial testing of soils has been announced. Soil samples are loaded pneumatically.

A test gauge in the base of the machine shows exactly what load will be applied before it is imposed. According to the manufacturer, when a toggle valve is opened, the pre-selected load is applied instantly—without impact—and can be maintained indefinitely. Even fluctuations in air supply pressure above 50 lb have no effect on the operation or accuracy of the machine.

The test chamber is an independent unit so that soil samples may be saturated in separate chambers without tying up the machine. The lateral pressure air system is built into the base of the unit. Parts are supplied for the application of water and/or vacuum to the upper and lower sample heads in any combination.

The machines are available in capacities of 1,500 and 3,000 lb axial load, but can be supplied with capacities up to 10,000 lb. TINIUS OLSEN TESTING MACHINE CO., 735 EASTON RD, WILLOW GROVE, PA.

(*New Products continued page 70*)

Special Hoists
FROM STANDARD PARTS
One of Eight Special Electric Incline Hoists with 36" diameter x 26" face drums, built for unbalanced duty of 1,500 lbs. at 200 FPM

• By modifying and re-combining our standard parts, Superior-Ligderwood-Mundy can engineer hoists to meet your specific requirements at the lowest possible cost.

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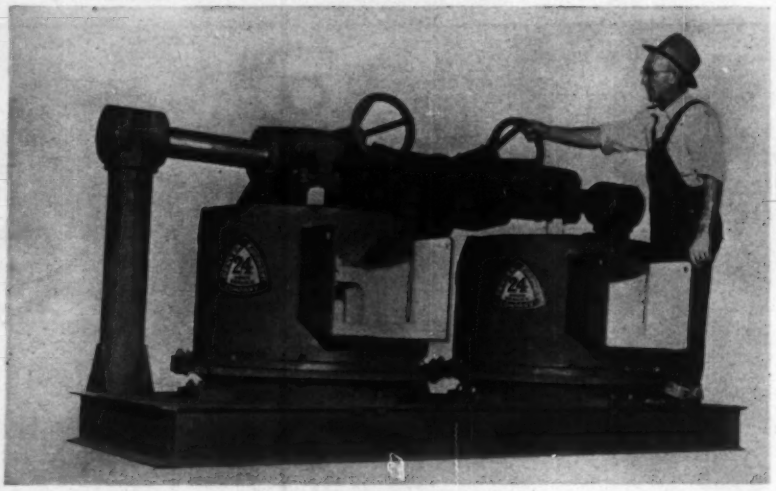


Big Pump Has Adjustable Stroke

A new series of diaphragm pumps, said to include the largest ever made with adjustable stroke, is now available. Pumps come in a range of sizes from 1 to 10 in. with capacities from 2½ to 1,000 gpm.

The diaphragm has a spiral nylon cord construction. Its curvature provides a true catenary curve flexing throughout the entire stroke, avoiding destructive kinking.

A heavy molded rim distributes tension to the full circumference of the diaphragm and permits it to be clamped in place.

Other noteworthy features include antifriction bearings and a hand-wheel to change the stroke length while the pump is operating.

The pump is used for such jobs as pumping filtrates and regulating flow from sludge thickener. DENVER EQUIPMENT CO., P. O. BOX 5268, DENVER 17, COLO.

Low Bowl Scraper Takes on Big Load

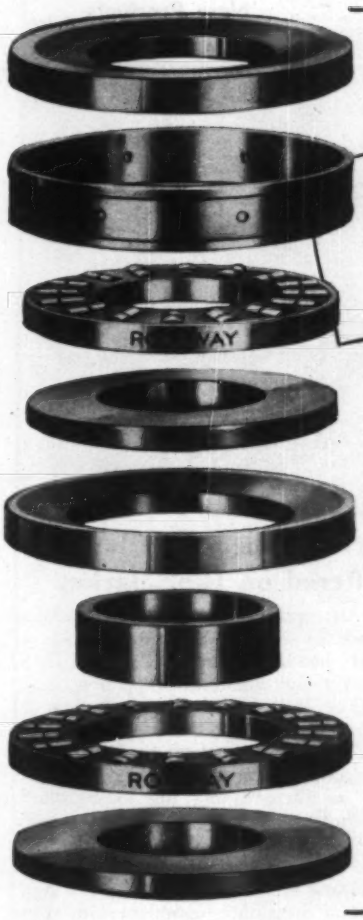
The new M-R-S tractor-scraper is good for 38 cu yd struck and 48 cu yd heaped capacity. It consists of the 250 tractor, fitted with 600 hp, towing the 250 HW scraper at up to 34 mph.

Said to have the lowest bowl in relation to capacity of any scraper on the market, the new scraper secures large, high density payloads in the most economical time in any class of material, the manufacturer claims.

Positive hydraulic controls for the apron, ejector and bowl hoist are designed for precision control of both loading and dumping.

The four-wheel tractor features an air-assisted clutch and a semi-automatic constant mesh transmission with a selection of nine forward speeds and two reverse speeds. M-R-S MFG. CO., FLORA, MISS.

(*New Products continued page 72*)



2 to 3 times Greater Thrust Capacity

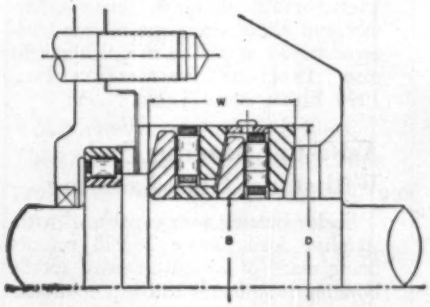
8 to 12 times Longer Life Expectancy

New ROLLWAY TANDEM THRUST BEARING

Using axial space along the shaft, rather than enlarging the housing diameter, this new Rollway tandem thrust bearing distributes the load over two or three stages of roller components. Gives 2 to 3 times more thrust capacity than conventional thrust bearings. Life expectancy is 8 to 12 times longer depending upon the number of stages.

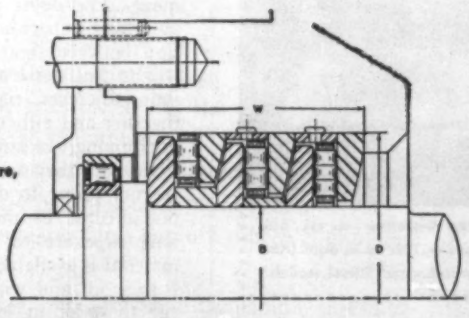
Each stage comprises a rotatable bearing plate . . . a bronze retainer with thru-hardened steel rollers . . . a compression sleeve . . . and a stationary bearing plate. The thrust load is applied to the first stage and is by-passed by each compression sleeve in turn to the remaining stage or stages.

Calculated deformation of the bearing plates distributes the load uniformly on all rollers. A greater number of rollers in the first stage carries about 60% of the load, without increasing the load per roller. Compression sleeves have cross-sectional areas proportional to the load imposed. Roller variance is held within one ten-thousandth inch.



✓ **TWO STAGE TANDEM**

22 sizes, up to 17" bore, 34" O.D., and 2,325,000 lb. capacity at 100 rpm



✓ **THREE STAGE TANDEM**

5 sizes, up to 17" bore, 34" O.D., and 3,410,000 lb. capacity at 100 rpm

Complete Specifications on Rollway Tandem Thrust Bearings, as well as other up-to-date information on bearing design is yours for the asking. See your Rollway engineer, or write: Rollway Bearing Company, Inc., Syracuse, N. Y.

Tandem Thrust Bearing manufactured by Rollway Bearing Company, Inc. under U.S. Patent Number 2,374,820.

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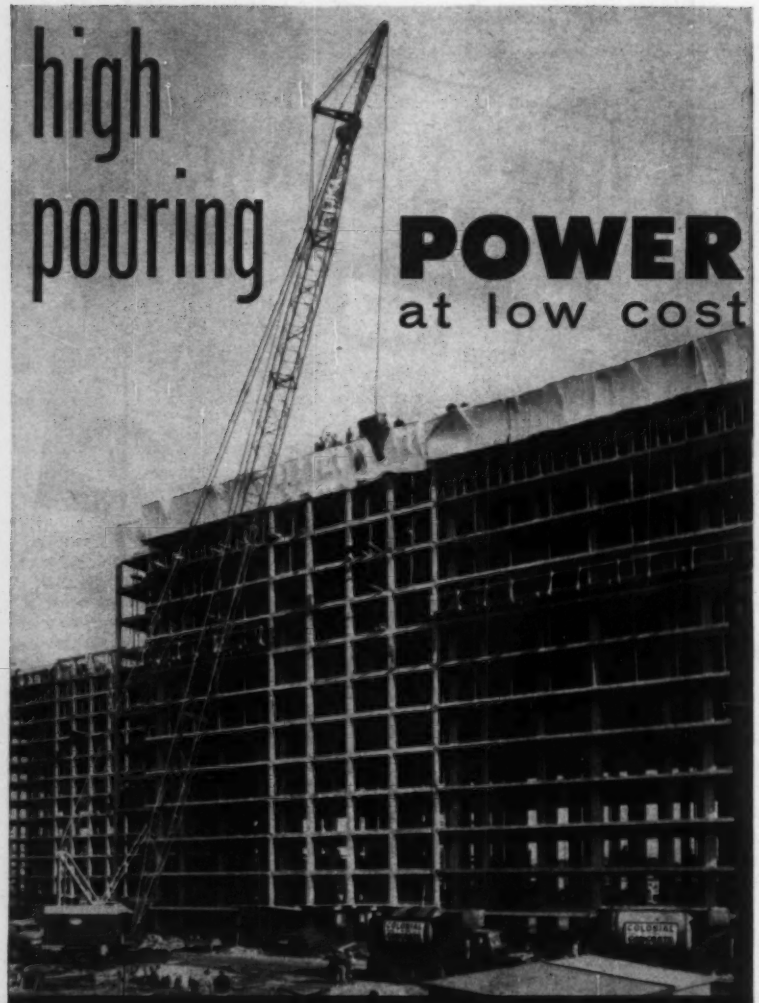
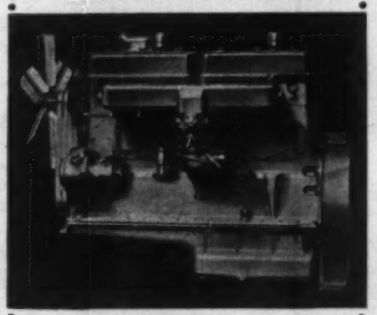


WAUKESHA

● Concrete is moving here. And a Waukesha-powered Lima crane with a 190′ boom is moving it. Using a 2-yd. concrete bucket, between one and two full floors a day are being poured, depending on truck delivery. The co-operative housing project is in Brooklyn's Sheepshead Bay area. Costaldo Construction Corp., Bronx, New York, own the unit. Its overhead valve engine—Waukesha Super-Duty WAK—is built to deliver greater power per cubic inch displacement. And it is rugged in every detail, oil pan to head. Renewable wet-type sleeve cylinders, and other "complete rebuildability" features give easy, economical maintenance. Get Bulletin 1554.

POWERING the LIMA CRANE



Waukesha WAK Gasoline—six cyl., 6¼ x 6½" bore & stroke, 1197 cu. in. displ. (Also in normal or turbocharged Diesel models.)

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN

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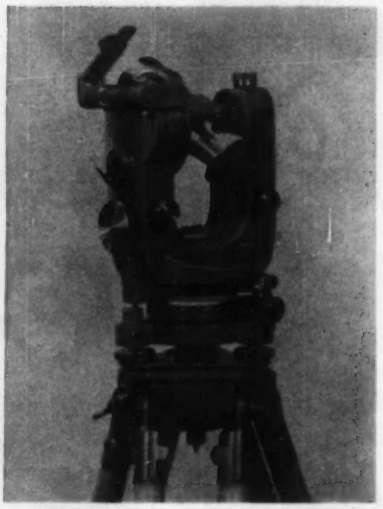

British Theodolite Is Now Offered on U.S. Market

An optical micrometer theodolite made by Cooke, Troughton & Simms Ltd., has been introduced to the U. S. market for engineers and surveyors.

The 9-lb British theodolite model V308, can be read directly to 20 sec of arc and by estimation to 5 sec. The instrument features brilliance of field of its circle-reading microscope, high magnification of the graduation system and easy reading. The telescope is of the internal-focusing type with a spiral focusing eyepiece.

The theodolite, complete with spirit levels, optical plummet, centering device and either telescopic or non-telescopic tripod, is packed in a lightweight case. Precision Instruments Inc., 1900 Fifth Ave., Troy, N. Y.

Asbestos Bearing Pads Withstand High Loading

Bridge bearing pads capable of withstanding loads above 20,000 psi are being made of woven asbestos, special bonding compounds and wire reinforcement. The dense pads are effective in absorbing impact and in reducing vibration between rigid bridge members.

The pads serve as conformable cushions wherever rigid members come together and either or both are subject to chipping, cracking or distortion.

Because they are inorganic, the pads are not prone to deterioration and are not affected by most chemicals or by long exposure to the elements. The material is available in thicknesses from ⅛ to 1 in. and widths of 1 to 24 in., cut to order in lengths up to 50 ft. Johns-Manville Sales Corp., 22 East 40th St., New York 16, N. Y.

(*New Products continued page 76*)

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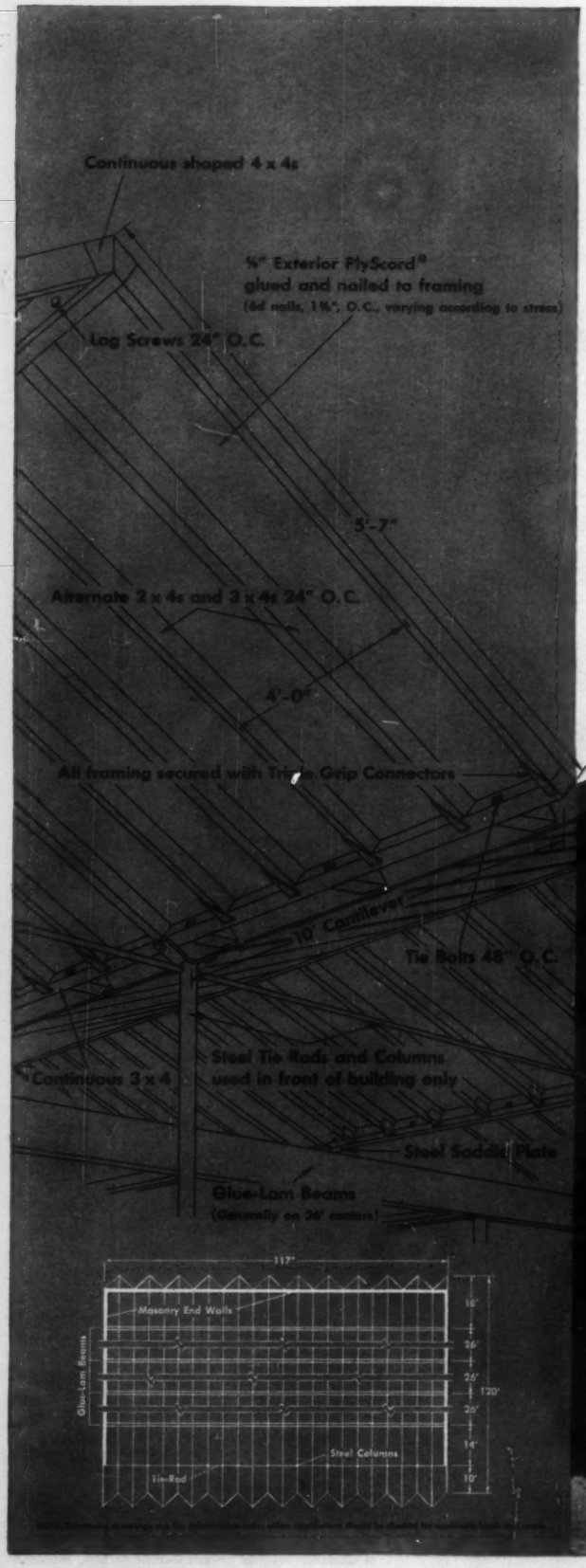
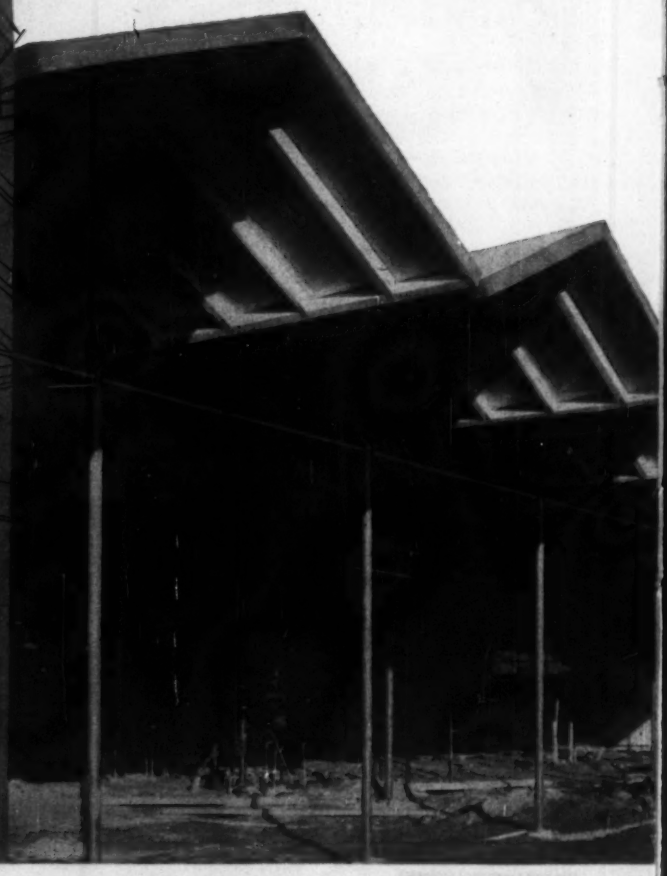


YEAKEL-POWELL BUILDING
LOCATION: Burien, Wash.
ARCHITECT: Jack N. Bryant, A.I.A.
STRUCTURAL ENGINEER: Harvey H. Johnson
CONTRACTOR: Powell Construction Co.



fir plywood folded plate roof 14,000 sq. ft. in only 9 hours

Fabricated on the job with common labor, new roofing system costs 10-20% less than conventional construction—provides attractive appearance, superior structural values.

THIS PRECISELY ENGINEERED folded plate roof—the first of its kind using lumber-framed plywood sections in series—offers several unique advantages:

Low cost and fast job-site assembly using common labor. Plywood components were installed by a 6-man crew in less than nine hours. Total costs, including all labor and materials, came to less than 80c per square foot—a figure some 10 to 20 percent less, locally, than joist or truss construction accomplishing the same clear floor area.

Structural simplicity. The roof consists of 11 plywood folded plates which rest on four glue-lam beams. Each of the inclined planes is a rigid plywood diaphragm, paired to form a giant self-supporting inverted V-beam which spans 10 feet from valley to valley and 26 feet from beam to beam. Posts, trusses and purlins are eliminated and the architect estimates that spans could be almost doubled where called for by the design.

Design adaptability. The plywood folded plate system provides large, clear floor areas and freedom in arranging—or rearranging—interior partitions. The folded plate creates an unusually attractive profile, with bays defining individual store areas.

FOR INFORMATION about fir plywood folded plate construction or other data—write

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TACOMA 2, WASHINGTON

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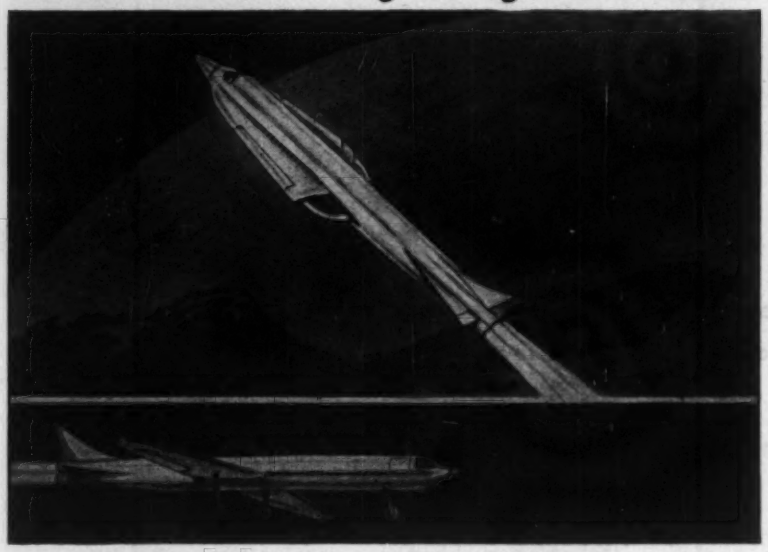
DFPA TESTED QUALITY

Fir plywood folded plate components were built on ground, crane-lifted into position in pairs. Heaviest lift was about 1,000 lbs. Contractor was impressed with the ease with which his crew assembled and erected sections.

The folded plate provides distinctive profile, freedom in placement of interior partitions. The front was given a 10′ overhang to cover store entrances. Underside was covered with medium density overlaid plywood to provide smooth, check-free paint base.

MARS outstanding design **SERIES**



brings 'em back alive

Today's burning problem in space flight is how to ease a rocket safely back to earth, without being consumed by the metal-melting friction of our dense atmosphere. Design Engineer Carl J. Rauschenberger's ingenious suggestion is a pair of wings, locked forward at blast-off, later folded back into flying position (insert) by hydraulic cylinder controls for a slow, safe descent. Mr. Rauschenberger also envisions a retractable glass nose cone, heatproof to withstand the take-off, drawn back to admit air to a jet engine on the return flight.

This outstanding solution to a timely design problem may already exist in working drawings on somebody's drafting board, or even in mock-up form. But whether a project is developed today, tomorrow or the year after next, it will always be important to shape ideas into realities with the best of drafting tools.

In pencils, of course, that means Mars, long the standard of professionals. Some outstanding new products have recently been added to the famous line of Mars-Technico push-button holders and leads, Lumograph pencils, and Tradition-Aquarell painting pencils. These include the Mars Pocket-Technico for field use; the efficient Mars lead sharpener and "Draftsman" pencil sharpener with the adjustable point-length feature; Mars Lumochrom, the color-drafting pencils and leads that make color-coding possible; the new Mars Non-Print pencils and leads that "drop out" your notes and sketches when drawings are reproduced.

The 2886 Mars-Lumograph drawing pencil, 19 degrees, EXEXB to 9H. The 1001 Mars-Technico push-button lead holder. 1904 Mars-Lumograph imported leads, 18 degrees, EXB to 9H. Mars-Lumochrom color-drafting pencil, 24 colors.

J.S. STAEDTLER, INC.
HACKENSACK, NEW JERSEY

at all good engineering and drawing material suppliers

Automatic "Magic Switch" Saves Flasher Batteries

A "Magic Switch" that automatically turns warning flashers on at dark and off at daylight is now available on all Neo-Transistor warning lights.

The device is said to end the contractors' problem of paying laborers to turn flashers on and off or wasting batteries by leaving the light on 24 hours a day.

The switch, an instrument similar to a photo electric cell, is activated at a light intensity of 100 candle power to turn the flasher off or on. To prevent a direct headlight beam from putting out the flasher even temporarily the switch lens is aimed upward.

The light pictured with the "magic switch" is the Neo-Transistor Model TR-O. It is said to be visible for one mile, to be weather-proof and to work for five months on one set of two batteries. It is available with a tamper-proof manual switch for deactivating the "magic switch" during storage, with several other combinations of switches, or without any switches. NEO-FLASHER MANUFACTURING CO., 3210 VALHALLA DRIVE, BURBANK, CALIF.

Colored Steel Now Offers Varied Building Designs

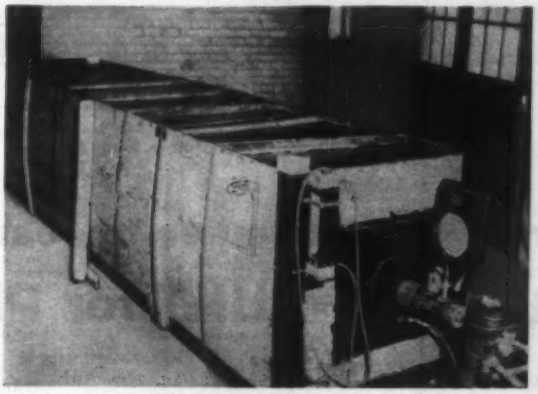
Pre-engineered steel buildings now come in colors—blue, green, bronze, gray and white—as well as the standard metal finish. The new "Stran-Satin" color is a two-layer protective coating of vinyl-aluminum, applied to galvanized steel panels at the factory.

Company tests showed no deterioration of the finish, no loss of adhesion, and no corrision of the steel under rigorous, continuous exposure. Tests also showed no blistering, peeling, cracking or fading from sunlight. STRAN-STEEL CORP., DETROIT 29 MICH.

for users of underground piping systems...

Now... for the first time, basic principles used by RIC-WIL for decades are supported by extensive independent research. These principles are brought out in Technical Reprint #16, issued as a compilation of the results of a survey by the Building Research Advisory Board, of the National Academy of Sciences and tests made by the National Bureau of Standards. These criteria are also the basis of new Guide Specifications issued by several Federal Agencies, all of which include the basic principles of RIC-WIL Prefabricated Insulated Piping Systems. This survey is of such magnitude that it required over 2,000 man-hours and some 2,500 pages of documents and tests.

All tests of a conduit system required by the survey and specifications have been completed by RIC-WIL and an approved independent testing laboratory has certified that RIC-WIL Systems comply. Write, wire or phone for complete information.



Part of test equipment built by RIC-WIL in QUALIFICATION TEST PROGRAM.

Ask for RIC-WIL *Catalog on complete line of systems available.*

Quality Piping Systems...

... of Exceptionally High Thermal Efficiency

SINCE 1910

RIC-WIL INCORPORATED — PREFABRICATED INSULATED PIPING SYSTEMS

BARBERTON, OHIO

IN CANADA: THE RIC-WIL COMPANY OF CANADA LIMITED

See our catalog in Sweet's and Engineers' Product File

26 Mack six-wheeler trucks with 5½-yard mixer bodies, plus four Mack tractor-trailer units to haul aggregate, handle the big part of the hauling requirements of Acme Ready Mix Concrete Co., of Rockford, Illinois. Mack quality construction pays dividends in operating economy and low maintenance costs, enabling Acme to handle both large and small jobs profitably.

From front bumper to rear axle...

QUALITY-BUILT for PROFITABLE HAULING

Ask the men who really know—the men who operate Macks—about the advantages they get from Mack quality construction. They'll tell you about the unexcelled economy ... minimum down time ... the extra years of dependable service —that add up to truly profitable operation.

Mack quality begins with Mack-built major components—front and rear axles, engines, frames, transmissions and brakes—which are made to the highest standards in the industry . . . with Mack features like the exclusive Balanced Bogie with Power Divider for positive traction under severe weather and terrain conditions ... and extends to Mack cabs, which offer the utmost in driver visibility and comfort, easy access to all working parts, and minimum upkeep requirements.

You'll find that Mack quality construction shows up in every phase of operation—and, where it really counts, in net profit figures.

Check with your Mack branch or distributor today to find out how Macks' profit-making capabilities can best be put to work for you. Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd.

MACK
first name for
TRUCKS

Publications

Industrial power tools—Tools and accessories covering complete line of drill presses, grinders, shapers, lathes, saws. 88-page Catalog AB-58-2. Rockwell Mfg. Co., Delta Power Tool Div., 497 N. Lexington Ave., Pittsburgh 8, Pa.

Motors and controls—"Synchronous Motors and Controls," summarizes types and features, including a discussion of power-factor correction and special application problems. 27-page Booklet B-7292, Westinghouse Electric Corp., Box 2099, Pittsburgh 30, Pa.

Electric cables—Technical information and catalog of flexible cords and cables. 64-page Bulletin 1108. The Okonite Co., Passaic, N. J.

Spraying equipment—Air compressors, paint-spraying equipment and accessories. 24-page Catalog CH-100 Campbell-Hausfeld Co., Harrison, Ohio.

Measuring apparatus—Calibrating and weighing system machine for checking load cells, thrust stands, torque-measuring dynamometers and other force measuring equipment. 4-page bulletin. Morehouse Machine Co., 1742 Sixth Ave., York, Pa.

Controls design—Adhesive backed display items of typical control instruments to aid in solving problems of instrument-panel layout. 10-page booklet with listings and order form. Michelson-Peters Control Displays, 15537 Ventura Blvd., Encino, Calif.

Cut-off saws—Complete line of metal cutting saws, both dry and wet types. 36-page booklet. Wallace Supplies Mfg. Co., 1300 Diversey Parkway, Chicago 14, Ill.

Concrete forms—Illustrations of form types and accessories used on various recent projects. 16-page brochure. Universal Form Clamp Co., 1238 North Kostner Ave., Chicago 51, Ill.

Mortar mixers—Mixers for plaster, mortar or terrazzo; drum design and simple power drive. 4-page bulletin. Kwik-Mix Co., 235 West Grand Ave., Port Washington, Wis.

Sealed motors—"Super-Seal" motors for dust, oil, acid and alkali-proof applications. Bulletin 05-51B9040, Allis-Chalmers, Milwaukee 1, Wis.

Hydraulic cutting tools—Listing of special-purpose cutting tools, with divisions according to general types of material to be cut and with sections on fabricating, tools setup, and auxiliary power equipment. Also, data charts for punching and riveting and recommendations for cutting of mild, high carbon and alloy steels. 70-page catalog. Manco Mfg. Co., Bradley, Ill.

Chain saws—Heavy-duty production chain saws for heavy industry such as mining, shipbuilding and railroads. 4-page folder. Vulcan Iron Works Co., 2960 South Fox St., Englewood, Colo.

Load chart—Safe working loads for prestressed concrete jacking rods. Midland Machine Corp., 519 East William St., Decatur, Ill.

Submersible pumps—New ratings and performances of 4 in. pumps are described. Included is a selector guide which enables a user to choose a pump appropriate for any depth, water pressure or capacity. Bulletin B255. Sumo Pumps Inc., 23 Brown House Rd., Stamford, Conn.

Anchors—Problems and answers of anchor installation on dams, waterways, and other jobs requiring precision setting of concrete embedded steel. 18 pages. Adjustable Anchor Corp., P.O. Box 385, Richland, Wash.

Welding supplies—A welding supplies and accessories catalog includes Airco's complete line of fluxes and ferrous and non-ferrous rods for gas welding. 52 page booklet, No. ADC 848C. Air Reduction Co., Inc., 150 E. 42nd St., New York 17, N. Y.

Studs—How to weld, maintain, inspect "Shear Connector Studs." 24 pages. Nelson Stud Welding, Gregory Industries, Inc., Lorain, Ohio.

Lightning—Facts and figures for personal safety and protection of buildings against lightning. 20 pages. Lightning Protection Institute, 53 W. Jackson Blvd., Chicago 4, Ill.

Slotted angle—A detailed Construction Handbook for use with a new slotted angle. 12 pages. Acme Steel Co., 135th St. & Perry Ave., Chicago 27, Ill.

Crawler tractors—A discussion of capabilities of the D8 and D9 crawler tractors is presented in "Increase Power, Production, Profit." 12-page booklet Form D 841. Caterpillar Tractor Co., Peoria, Ill.

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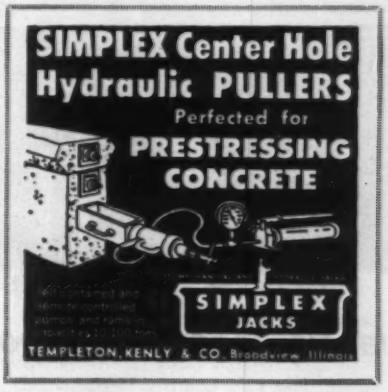

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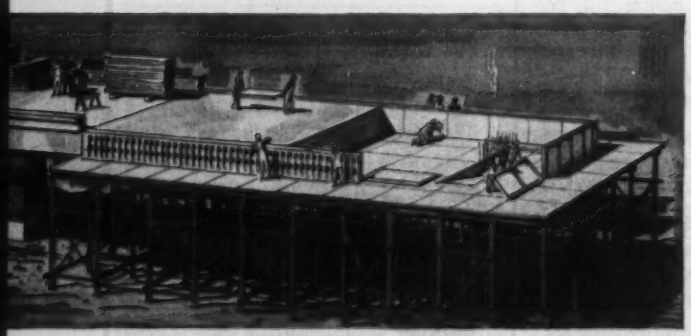
GPX® CONCRETE FORM

Plastic-faced for smoother finish, faster stripping, longer life!



FOR A BETTER JOB, SPECIFY GPX CONCRETE FORM.

Whether it's a skyway, or a skyscraper, this high-density plastic-faced plywood is the ideal concrete form.

Smoother surface. You get a handsome concrete face, unmarred by grain, checks or patches. In buildings, ceiling slabs can be quickly prepared for painting.

Faster stripping. Smooth waterproof panels won't cling to concrete, are immediately available for re-use.

Longer form life. Form life is limited only by the number of cuts, and handling care. Available in all standard sizes and can be custom-sized. Write today for sample, specifications, and local source. Address Georgia-Pacific, Dept. ENR 1258, Equitable Bldg., Portland, Oregon.

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Ralph H. Bartelsmeyer: He rips through red tape.

Meet the New AASHO Chief

Ralph H. Bartelsmeyer, newly elected president of the American Association of State Highway Officials, becomes the spokesman for the 49 state highway departments at a delicate moment in the development of U. S. highways.

The major job ahead, he told ENR, is to see that the interstate highway system is kept on schedule. But, he points out, "We don't want to lose sight of the fact that the 41,000-mile interstate system is not a cure-all for traffic needs and desires."

"Traffic needs and desires" have been Mr. Bartelsmeyer's number one preoccupation for 27 years. That's how long he's been working on highways.

Now Illinois' chief highway engineer, Mr. Bartelsmeyer began his career with the state highway department after graduation from the University of Illinois in 1931.

Highway construction, Mr. Bartelsmeyer says, must continue to expand even after the interstate program is finished. He points out that highway use will grow far more in the next fifteen years—while the interstate plan is under construction—than it has during the past fifteen years.

Communities not serviced by the present program will demand equal service, he says. New roads will generate more highway use taxes that will be used for more roads a decade or more from now.

The new AASHO president had been chairman of the organization's highway transport committee. That group is re-evaluating truck size and weight limitations.

A civil engineer, Mr. Bartelsmeyer has served Illinois as a junior highway engineer and county roads superintendent before becoming the chief road official in 1953.

He is a member of the Illinois Association of County Superintendents, The Illinois Society of Professional Engineers, the Illinois Engineering Council and the American Road Builders Association.

Mr. Bartelsmeyer's colleagues in Illinois credit him with an "amazing" knack for cutting through red tape quickly and analyzing a knotty highway or engineering problem.

They say his words, though spoken softly, carry unmistakable authority and the ring of leadership.

Years of experience have made him a past-master at conducting engineering meetings. He knows how to keep a meeting stable through hot disputes and he seldom shows annoyance.

But, those who know him say, when he begins shuffling the papers on his desk—look out!

Since Mr. Bartelsmeyer became chief highway engineer, Illinois' highway budget has spurted from $90 million to $270 million. And much of that increase—$100 million a year—is for the interstate program. He has also had a key role in the $22 million AASHO test road development at Ottawa, Ill. The test program is handled by the Highway Research Board, but construction of the road was done by Illinois.

Mr. Bartelsmeyer believes in more and safer highways. Says he: "The automobile is here to stay—and I'm for it."

Water Distributor Names O'Connell Chief Engineer

Conrad W. O'Connell has been appointed chief engineer of the Plainfield-Union Water Co., Plainfield, N. J.

The new operations executive returns to his native state from Pasadena, Calif. There he was general manager of the Bailly Engineering Enterprises, engaged in engineering consultation projects throughout the southwest.

From 1950 to 1956 he was general manager and chief engineer of the New York Water Service Corp. Earlier in his 35-year career in water supply engineering, Mr. O'Connell worked on projects in North and South America. From 1932 to 1941 he was in Venezuela as district engineer for the Standard Oil Company of Venezuela (now the Creole Petroleum Co.).

During World War II he was general superintendent of Williams Bros., of Tulsa, Okla., in charge of a series of intricate river-crossing operations in the building of the "Big Inch" pipeline.

Mr. O'Connell received his engineering training at Syracuse University and the University of California.

Secretary-Manager Named For New Clay Pipe Group

Lewis A. Young has been named secretary-manager of the Southern Clay Pipe Institute, Inc., a newly organized association of vitrified clay pipe manufacturers.

The group will carry on education, experimental and research programs in the production, use and installation of its members' products.

Mr. Young has been chief engineer of the health departments in both Colorado and Kansas. He has designed water and sewage treatment plants in Kansas and Missouri. And he has seen service in Venezuela with the Venezuela Gulf Oil Co., and in Bogota, Columbia, with the Institute of Inter-American Affairs.

Mr. Young is a native of Neodesha, Kan. He received a B. S. from the University of Kansas and an M.S. in engineering from Harvard.

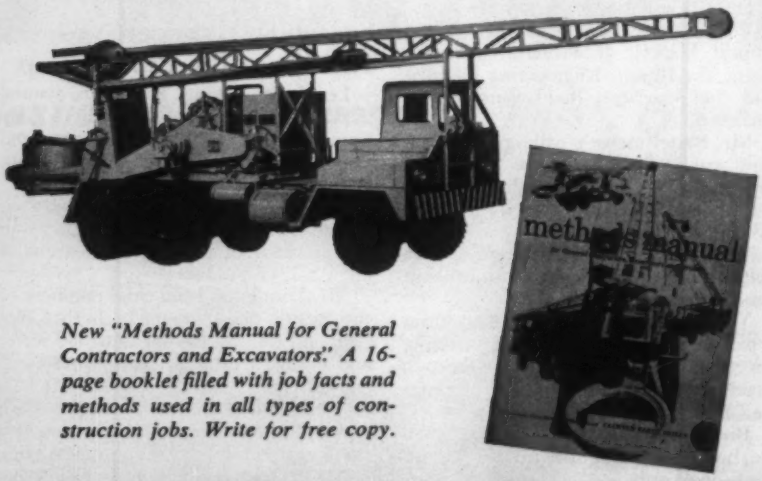
(*Men and Jobs continued page 82*)

"Big Bore" Drilling for as little as 18¢ per foot

CALWELD HAS THE CAPACITY to do many excavating jobs. A big Calweld bucket type drill *digs fast*... down to a 45-foot depth in one hour. *It digs big*... holes up to 10 feet in diameter. *It digs deep*... down to 200 feet. *It digs with precision*... absolutely vertical holes to exact specification. *It takes a 1½ yard bite*... with each pass.

Take another look at the Calweld bucket type drills. They are big, fast and maneuverable—and they offer a new and more economical method of pre-boring for concrete piles, excavating for foundations, excavation shoring, manholes, cesspools, soil testing and hundreds of other jobs.

MOBILE AND MANEUVERABLE DRILLS 10" to 120" HOLES 200 FT. DEEP



New "Methods Manual for General Contractors and Excavators." A 16-page booklet filled with job facts and methods used in all types of construction jobs. Write for free copy.

CALWELD DRILLS

CALWELD, INC. 7222 E. Slauson Ave., Los Angeles 22, Calif.

Construction Interests Join to Form New Firm

A businessman, a planner, a contractor, a civil engineer and an architect form the management of a new corporation called unique in the Pacific Northwest. It is organized to coordinate industrial and commercial projects—to do programming, financing, design, land development and construction.

Robert J. Block, Seattle businessman, is president, and John L. Nordmark, executive vice president of Puget Planners, Inc., is secretary. James W. Cawdrey of the firm of Cawdrey & Vemo, Inc., general contractors is treasurer. John B. Skilling, principal of Worthington & Skilling, structural and civil engineers, and Perry B. Johanson, partner in Naramore, Bain, Brady & Johanson, architects, are vice-presidents.

The firm's name: Columbia-Cascade Corp.

The new firm expects to meet the existing demand for commercial and industrial site development and construction in the Pacific Northwest, Mr. Block said. It expects its clients to come from industries and commercial developments seeking proper sites and from property owners seeking development of their sites.

National Constructors Name General Counsel

The National Constructors Association has named New York attorney John K. Carroll to the newly created post of general counsel.

NCA, is composed of engineering and construction companies primarily engaged in the design and construction of major industrial facilities such as oil refineries and chemical, steel and power plants. It has played an active role in construction labor relations.

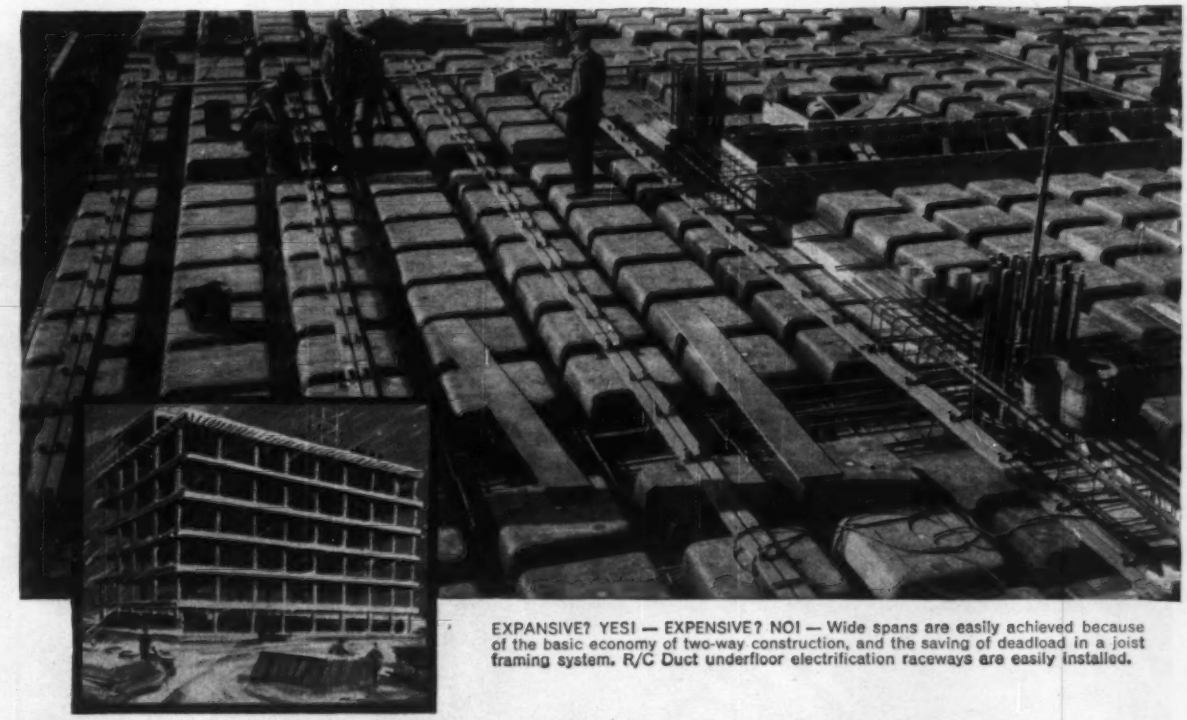
Mr. Carroll has represented the association for the past nine years in legislative and labor matters and before administrative agencies and federal courts.

Careers

Associations

A suite of offices in the new headquarters building of the American Chemical Society in Washington, D. C., has been dedicated in honor of **Ralph E. Hall**, 73-year-old pioneer industrial water consultant.

George N. Cohen was elected president of the Concrete Industry Board of New York City. He is president of Euclid Contracting Corp. Other new officers include **Nelson L. Doe**, vice president; **William J. McIntosh**, secretary; **Dugald J. Cameron**, treasurer.



EXPANSIVE? YES! — EXPENSIVE? NO! — Wide spans are easily achieved because of the basic economy of two-way construction, and the saving of deadload in a joist framing system. R/C Duct underfloor electrification raceways are easily installed.

NEITHER RAIN, NOR SLEET, NOR SNOW...

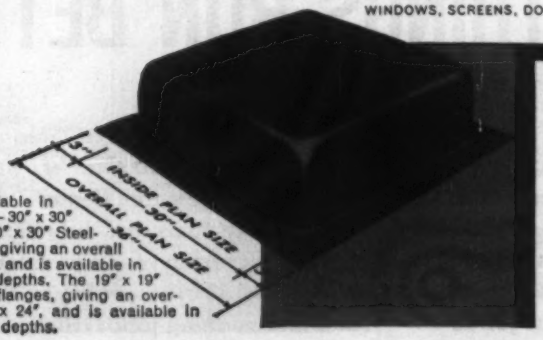
can stop Ceco Steeldome construction

Every engineer and contractor faces interruptions in the building time-table. But you can avoid undue delays caused by weather when you build with Ceco Steeldomes. For they are impervious to the elements . . . never get soggy, limp or distorted. Since Steeldomes are rigid, you can accurately pre-determine concrete quantities, and be assured of a high quality finish, too. Another advantage—it costs less to place rebars on a rigid Steeldome deck. And after the pour has cured, Steeldomes are easily removed. There is no costly clean-up. To speed building, to save material and labor . . . use Ceco Steeldomes—the best way to form two-way dome construction. Ceco Steel Products Corporation—general offices: 5601 West 26th Street, Chicago 50, Illinois. Offices, warehouses and fabricating plants in principal cities.

CECO STEEL

IN CONSTRUCTION PRODUCTS CECO ENGINEERING MAKES THE BIG DIFFERENCE

STEELFORMS / CONCRETE REINFORCING / STEEL JOISTS / METAL ROOF DECK / WINDOWS, SCREENS, DOORS / CECOFRAME BUILDINGS / METAL LATH



Steeldomes are available in two standard sizes — 30" x 30" and 19" x 19". The 30" x 30" Steeldome has 3" flanges, giving an overall plan size of 36" x 36", and is available in 8", 10", 12" and 14" depths. The 19" x 19" Steeldome has 2½" flanges, giving an overall plan size of 24" x 24", and is available in 4", 6", 8", 10" and 12" depths.

CECO STEEL PRODUCTS CORPORATION
5601 West 26th Street, Chicago 50, Illinois

Please send new catalog #4067 covering Ceco Steeldome construction.

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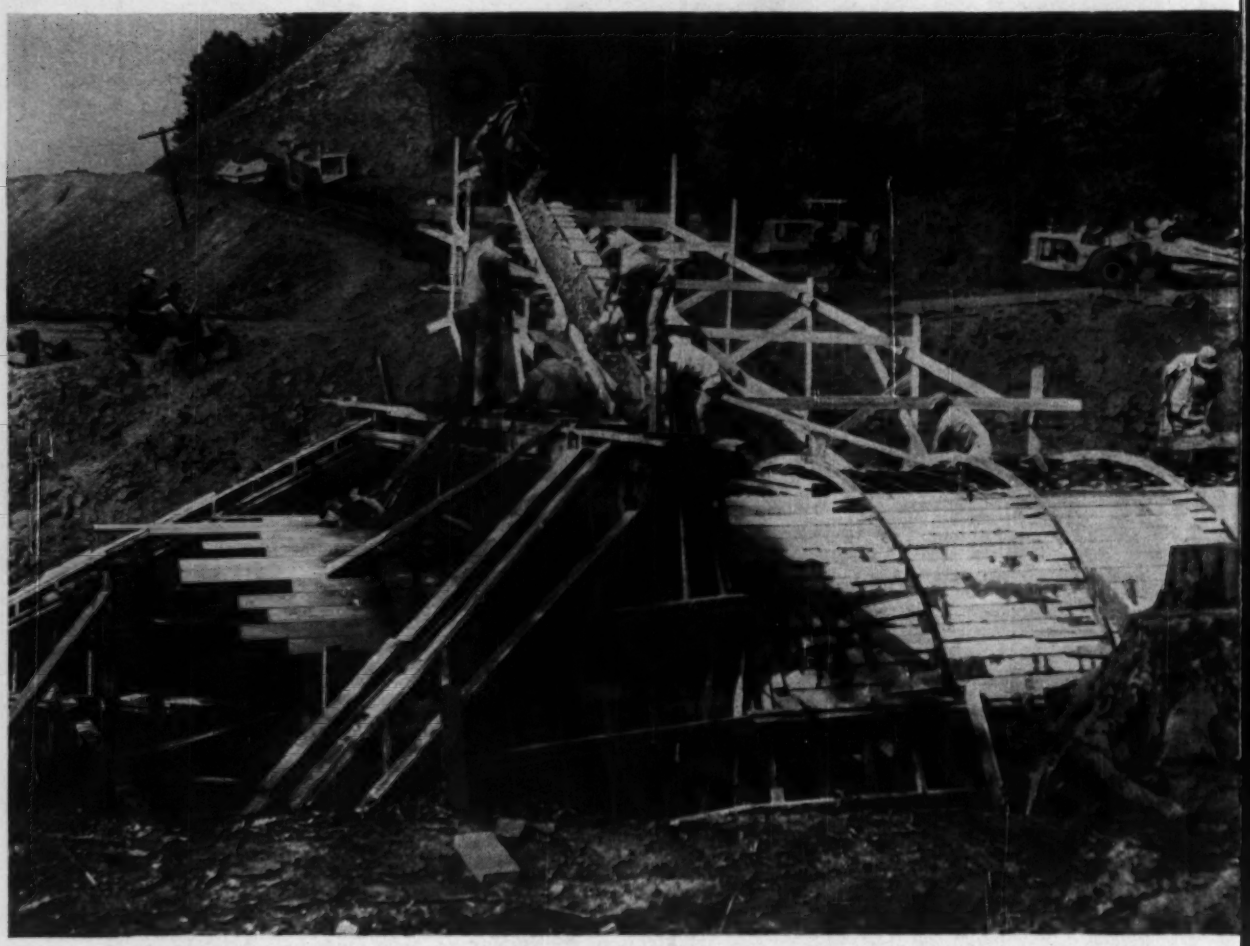


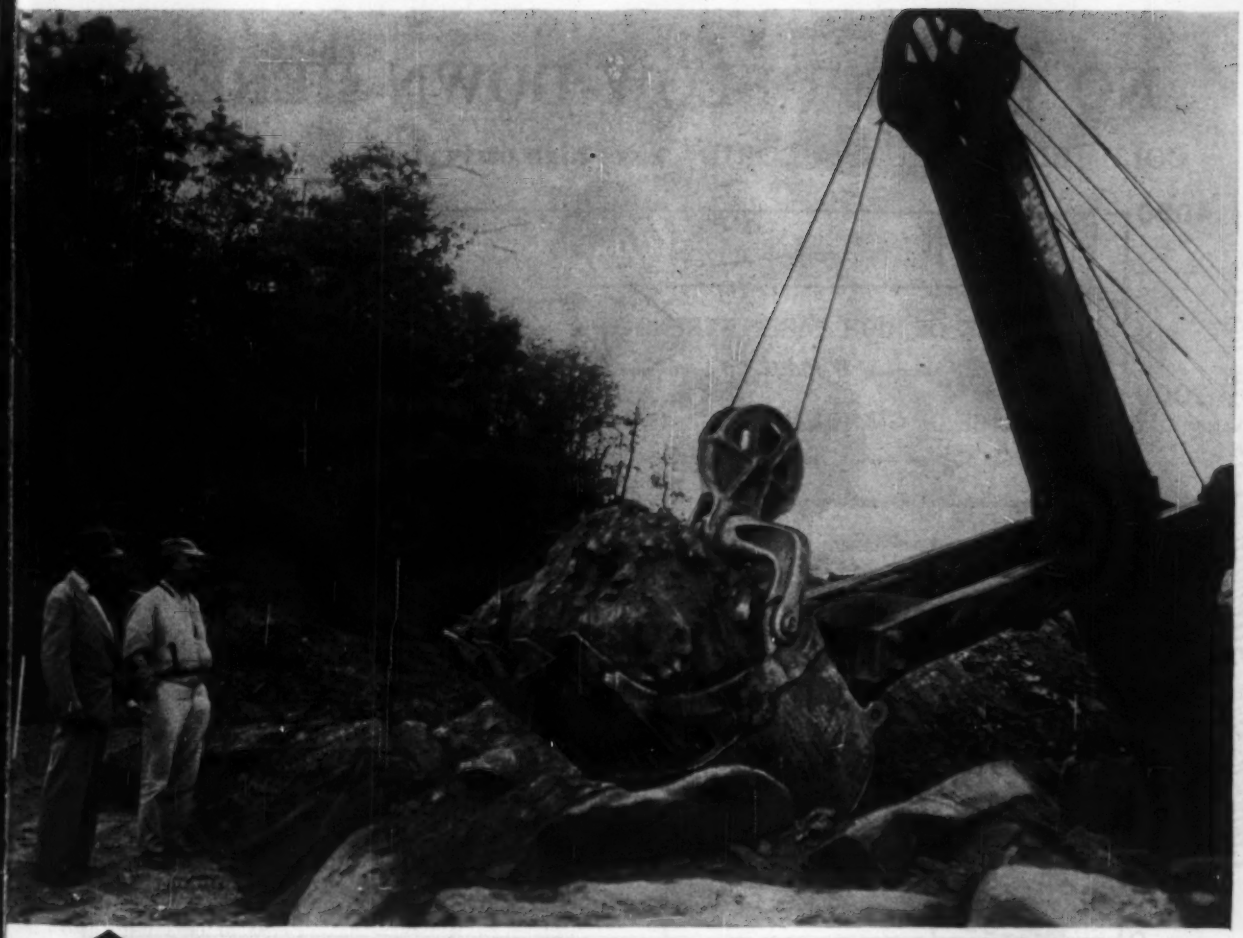
When a creek obstructs a 3½-mile road project, move the creek! That's what S. Gavlik, Contractor, did to relocate Route 422 near Indiana, Pennsylvania. The project, let under the Federal Highway Program, included three sub-surface concrete structures to carry off surplus water from the creek. Photo above shows concrete being poured for one of the three sub-surface structures. Gulf has served Gavlik for years.

Moving a creek...building a road... or dredging a channel? On any project...

GULF MAKES THINGS RUN BETTER!

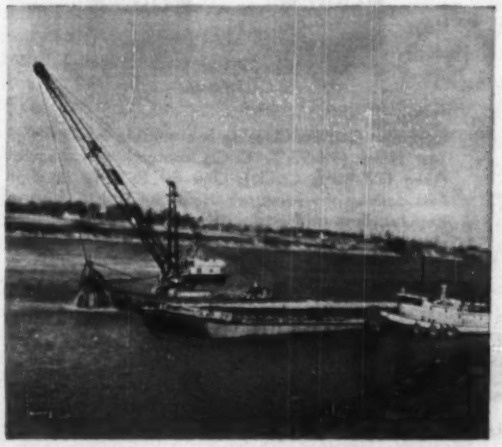
You benefit three ways when you depend on Gulf for your fuels and lubricants. Here's why:

- You're sure of prompt delivery. Fifteen hundred strategically located warehouses—in 32 states—provide an unfailing supply of the fuels and lubricants you need.
- Your Gulf Sales Engineer will be on the job to help your operating and maintenance men get most efficient use of petroleum products. And he's backed by 1300 Gulf scientists and engineers at Gulf Research Center.
- Gulf quality fuels and lubricants insure best performance from your equipment... help you avoid mechanical delays. You'll have a smoother-running job... lower operating costs ... because Gulf makes things run better.



One of the early jobs to be let under the Federal Highway Act was the relocation of Route 66 at Mamont, Pennsylvania. This job, which involved building an overpass over Route 80, was awarded to Ralph Myers Contracting Corporation of Pittsburgh. In the photo above are H. H. Hossler, Gulf Sales Representative, and Marion Hoke, Superintendent of Ralph Myers Contracting Corporation, on the job site. Myers depends on Gulf products to help prevent mechanical delays.

The South Cornwall Channel, a vital link in the $900,000,000 St. Lawrence Power-Seaway Project, was dredged by S. J. Groves & Sons Company of New York City. Groves removed about 1,800,000 cubic yards. Tug and dragline used clean-burning Gulf Diesel fuel.



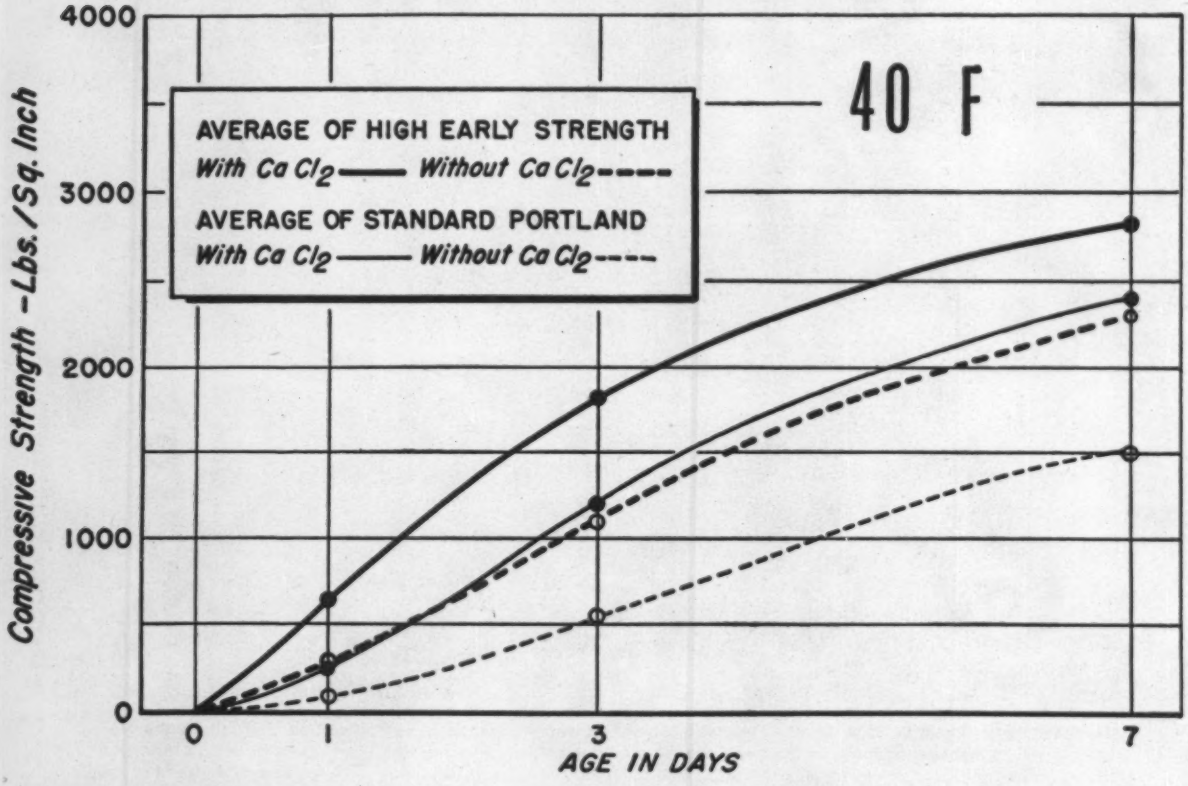
On the St. Lawrence Power-Seaway Project, one of the numerous trucking assignments of McConville, Inc., of Ogdensburg, New York, was hauling piling from Massena Intake. McConville was one of the many contractors on the St. Lawrence Project who counted on Gulf performance and service.

GULF OIL CORPORATION
Department DM, Gulf Building
Pittsburgh 30, Pa.

GULF

NO WINTER SLOW-DOWN HERE

COLUMBIA CALCIUM CHLORIDE gives high early strength days faster



Low winter temperatures shouldn't put a chill on your concrete schedules. Pours can go smoothly, set time be shortened safely, finishing done without delay or overtime. How come? Columbia Calcium Chloride comes . . . right in the ready mix.

The American Concrete Institute now recommends the addition of calcium chloride for cold weather concreting. (ACI Standard "Recommended Practice for Winter Concreting.") These benefits have been proved, on jobsite after jobsite: initial and final set achieved up to three times faster, quicker early strength, greater ultimate strength. Finishing goes faster, forms can be pulled days earlier, contractor profit increases.

Let our Columbia Calcium Chloride engineers help you save money on your concrete work this season. For their assistance, write today to Calcium Chloride Department at our Pittsburgh address, or to any of our fourteen District Sales Offices.

Columbia Calcium Chloride is available in both High Test Flake (94-97% $CaCl_2$ content) and Regular Flake (77-80% $CaCl_2$). One 80 lb. bag of High Test delivers the same results as one 100 lb. bag of Regular. Both add easily at suppliers' plants or right at the jobsite.

COLUMBIA-SOUTHERN CHEMICAL CORPORATION

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DISTRICT OFFICES Cincinnati, Charlotte, Chicago, Cleveland, Boston, New York, St. Louis, Minneapolis, New Orleans, Dallas, Houston, Pittsburgh Philadelphia, San Francisco IN CANADA Standard Chemical Limited

Obituaries

Arthur P. Skaer, 73, a consulting engineer in Buffalo, N. Y., and a partner in the firm of Carpenter & Skaer, Inc., contractor. The company built many industrial buildings in western New York.

Abram Garfield, 85, head of the architectural firm of Garfield, Harris, Shafer, Flynn & Williams, Cleveland, Ohio. Mr. Garfield was instrumental in founding a school of architecture in Cleveland in 1920; he headed it for 15 years until it became a part of Western Reserve University.

William K. Borneman, 55, civil and professional engineer, in Buffalo, N. Y. He was president of William Borneman, Inc., and vice president of the BAW Construction Co. During a 30-year career in the construction business he built many schools, industrial and commercial buildings throughout New York State.

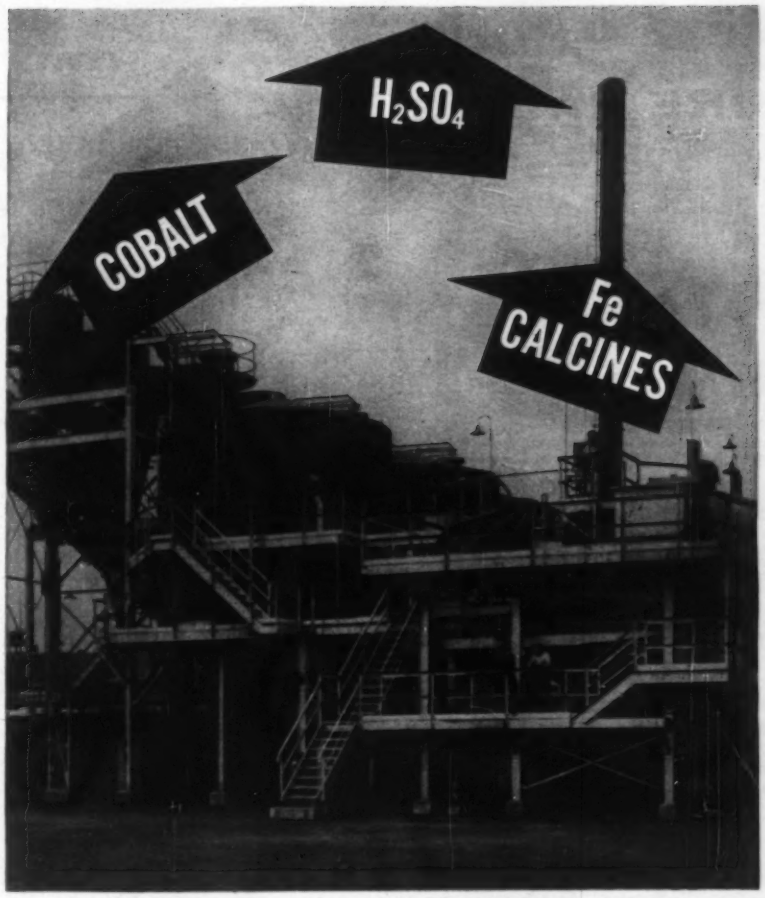
Albert R. Walker, 77, architect and engineer, in Los Angeles. In the past 50 years he helped design over 350 public, commercial, and industrial buildings in Southern California. He was senior partner of Walker & Vawter from 1910 to 1917; Walker & Eisen from 1918 to 1941; and Walker, Kalionzes & Klingerman from 1941 to 1954.

Kenneth H. Sidall, 50, planning engineer of the Ontario Department of Highways, Toronto. An expert interpreter of air photos for highway location, he was loaned during World War II to the U.S. Army as an adviser on location of the Alaska Highway.

Col. Robert C. Hunter, 70, retired district engineer for the U.S. Army Engineers. During World War II, as district engineer in Sacramento, Calif., he directed construction of military installations in California, Nevada, and western Utah. Col. Hunter retired from the army in 1947 and was named executive officer of the California State Lands Commission, which has charge of tidelands oil leasing.

Henry S. Douglass, 78, former superintendent of the Statesville, N. C., city water and sanitary departments.

Gerald J. Fitzgerald, 67, former commissioner of public works of Utica, N. Y. He served the city for 38 years and was assistant city engineer for 22 years. Until his recent illness he was general superintendent of Midstate Builders, Inc.



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more proof of versatility of the DORRCO FluoSolids System

Pyrite used for H_2SO_4 production at a well known East Coast steel mill has a valuable cobalt content. Advanced roasting techniques provided by the Dorrco FluoSolids system not only make possible preferential cobalt sulfatization that results in 90 percent cobalt extraction at the leaching plant, but also produce SO_2 in sufficient strength for acid manufacture, as well as calcines for blast furnace charging—all from a single basic raw material!

This operation—never attempted before—is typical of the extreme versatility of today's most important advance in roasting technology—the fluidization principle.

For detailed information on Dorr-Oliver equipment and services involving the separation of finely divided solids in suspension or fluid techniques, drop a line to Dorr-Oliver Incorporated, Stamford, Connecticut. Ask for Bulletin 7003.

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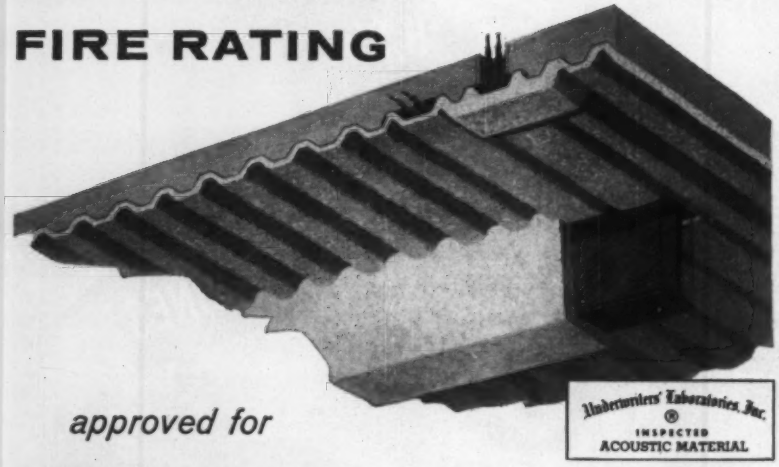
NEW 4-HOUR FIRE RATING



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- Corrugations do not have to be filled – 25# bag should cover about 3¾ sq. yd. surface area . . . more than any other plastering material which gives same protection.
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- Noise reduction coefficient of 0.60.
- Gives attractive ceiling finish – can be colored with lime-proof pigments or painted with non-bridging paint.

Blue-print of fire test assembly, with complete application specifications, available on request. Just use coupon.

Permalite® *Acoustical Fire-Gard is produced only by Permalite Franchisees*

The tested assembly consisted of Permalite Acoustical Fire-Gard machine-applied to Cofar and E/R-Cofar, manufactured by Granco Steel Products Co.

Perlite Department-E 612 So. Flower St., Los Angeles 17, Calif.

Please send me information on Permalite Acoustical Fire-Gard, including fire test data and application specifications.

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Company_____

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Books

Great Lakes Geology

GEOLOGY OF THE GREAT LAKES—by Jack L. Hough. 313 pages. University of Illinois Press, Urbana, Ill. $8.50.

This book is the first complete geological study of the Great Lakes in 40 years. It summarizes the events that led to the formation, and describes their physical characteristics and the processes operating in them. The presentation is in a non technical manner and includes 26 maps showing the major stages of lake history to help students of the Lakes area.

Just Published . . .

PRESSURE CHANGES AT STORM DRAIN JUNCTIONS—by W. Sangster, H. Wood, E. Smerdon and H. Bossy. Engineering Series Bulletin No. 41, Engineering Experiment Station, University of Missouri, Columbia, Mo. Complete report—$2.00; design methods only—$1.00.

THE EFFECTS OF LARGE LOT SIZE ON RESIDENTIAL DEVELOPMENT—Technical Bulletin 32. Urban Land Institute, 1200 Eighteenth St. N.W., Washington 6, D. C. $3.00.

ELECTRICAL CONSTRUCTION MATERIALS LIST, MAY 1958—National Board of Fire Underwriters, 85 John St., New York, N. Y.

ELECTRICAL APPLIANCE AND UTILIZATION EQUIPMENT LIST, MAY 1958—National Board of Fire Underwriters, 85 John St., New York, N. Y.

HAZARDOUS LOCATION EQUIPMENT LIST, MAY 1958—National Board of Fire Underwriters, 85 John St., New York, N. Y.

LETTER SYMBOLS FOR HYDRAULICS—ASA Y10.2-1958. American Standards Association, 70 E. 45th St., New York 17, N. Y. $1.00.

THE STRUCTURE OF STEEL—by Edwin Gregory and Eric N. Simons. 176 pp. Philosophical Library, Inc., 15 E. 40th St., New York 16, N. Y. $10.00.

ENVIRONMENTAL SANITATION—by Joseph A. Salvato, Jr. 660 pp. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y. $12.00.

STAGES AND DISCHARGES OF THE MISSISSIPPI RIVER AND ITS OUTLETS AND TRIBUTARIES—1956 — Mississippi River Commission, Corps of Engineers, U. S. Army, P.O. Box 80, Vicksburg, Miss. $1.00.

ALKALI REACTIONS IN CONCRETE—PROGRESS REPORTS—Committee on Alkali Reactions in Concrete, 20 Borgergade, Copenhagen K, Denmark.

THE EXPLODING METROPOLIS—193 pp. Doubleday & Company, Inc., 575 Madison Ave., New York 22, N. Y. $3.95.

STATICALLY INDETERMINATE STRUCTURES—by Samuel Napp. 291 pp. Rae Napp, 1749 Grand Concourse, New York 53, N. Y. $10.00.

How To DESIGN POLE-TYPE BUILDINGS—American Wood Preservers Institute, 111 W. Washington St., Chicago 2, Ill. $2.

Steel vs Concrete Water Lines

Steel pipe takes $841,000 water line contract in Massachusetts from concrete pipe alternate

Contractors were given their choice of concrete or steel 48-in. and 36-in. pipe for these water lines in Weston, Newton, Wellesley and Needham, Mass.

The Water Division, Metropolitan District Commission of the Commonwealth of Massachusetts, awarded the $841,080 contract to Wes-Julian Construction Co., Dedham, Mass., on the steel pipe alternate. Two of the thirteen bidders competing for the job, including the successful bidder, did not submit any bids on the concrete pipe.

Bids on the steel pipe ranged from $37.75 to $64.80 per lin ft for the 48 in., and from $28.00 to $51.32 per lin ft for the 36-in. pipe. On the concrete pipe, bids ranged from $43.50 to $81.20 for the 48-in. and from $31.50 to $55.00 per ft for the 36-in. pipe.

The Commonwealth furnishes cast iron pipe for the following uses: 20 in. and 24 in. for connections, 12 in. for blowoffs and 6 in. for air vents.

Prevailing wages in Boston include: carpenters $3.50; tractor operators, including bulldozers, $3.50; power crane and shovel operators $3.875; truck drivers $2.395-$2.65; common laborers $2.67.

The bidding on the steel pipe alternate, on which the award was made, went like this:

1C Wes Julian Constr. Co., Dedham, Mass.	$841,080
2 C. DiMartino & Sons, Inc., Hyde Park, Mass.	895,270
13 C. Reppucci & Sons, Inc., Boston, Mass.	1,485,605

Bids: 10-2-58 Items	Unit	Quantity	Unit Prices 1C	2
Steel pipe, 48" f&l	lf	8,940	$37.75	$40.00
36" f&l	lf	4,375	28.00	30.50
crossings, 52" f&l	lf	1,160	65.00	50.00
36" f&l	lf	250	60.00	41.25
CIP for conns, 24" & 20" lay	lf	*220	20.00	10.00
blowoffs, 12" lay	lf	*250	10.00	10.00
air vents, 6" lay	lf	*250	10.00	10.00
Excavation above estab grade, rock	cy	3,000	5.00	6.00
below estab grade, rock	cy	300	5.00	12.00
earth	cy	1,500	2.00	3.00
Add for conns to shaft 5	ls	job	10,000	6,500
railroad crossing	ls	job	10,000	5,500
Tunnels, RR xing & Rt 128	lf	230	150.00	190.00
Rt 9 & Sudbury Aqueduct	lf	145	250.00	190.00
Portland cmt grout for exterior of tunnel lining	bbl	200	20.00	10.00
Add for river crossing	ls	job	30,000	50,000
	ls	job	30,000	55,000
Cmt mortar pipe lining	lf	1,160	17.00	17.00
Chambers for 36", 30", 24" & 20" valves	ea	7	450.00	500.00
16" & check valves & blow-off wells	ea	9	300.00	400.00
12" blowoff & bypass vlvs.	ea	13	275.00	350.00
air valves & manholes	ea	19	250.00	250.00
Conc masonry for fndns, anchors & pipe encasement, exc in tunn. f&p	cy	1,100	30.00	22.00
pipe encasement in tunnel f&p	cy	300	25.00	50.00

Bids: 10-2-58 Items	Unit	Quantity	Unit Prices 1	2C
Borrow, ordinary	cy	3,500	1.50	2.00
gravel	cy	2,000	2.00	2.00
Bituminous base course f&p	sy	2,750	3.00	3.00
concrete pavement f&p	sy	3,650	2.00	2.00
Surfacing, temporary f&p	t	600	10.00	12.00
Spec unif police f	hr	1,200	3.00	2.75

f&l furnish & lay f&p furnish & place

* Commonwealth furnished

Contract date: 10-14-58

Georgia Sewer Crossings Are Under High Fills

These nineteen separate sanitary sewer crossings are being installed for future use along a freeway between Atlanta and Lithonia, Ga., by the DeKalb County Sewer Dept. R. E. Barrett, Decatur, Ga., is the engineer.

The $64,747 award to Nichols Contracting Co., Atlanta, Ga., is 12.2% below the engineer's estimate, 15.4% below the second and almost 37% below the high of the six bids.

The crossings will require 5,202 lin ft of cast iron and 1,416 ft of reinforced concrete pipe.

Cast iron pipe is Class 150, federal specifications WW-P-421.

The contractor furnishes all materials. The railroad is 5 miles from the project.

Prevailing wages in Atlanta include: carpenters $3.05; tractor operators, including bulldozers $2.70-$2.85; power crane and shovel operators $3.225-$3.375; truck drivers $1.70-$2.05; common laborers, $1.70.

The six bids on these crossings included:

1C Nichols Contr. Co., Atlanta, Ga.	$64,747
2 L. F. Wilder, Contractor	78,527
6 Concrete Constr. Co., Atlanta, Ga.	102,260
EE R. E. Barrett, DeKalb County Sewer Dept., Decatur, Ga.	73,779

Bids: 9-26-58 Items	Unit	Quantity	Unit Prices 1C	2
Cast iron sewer, 8", 0- 5' cut	lf	2,000	$5.00	$4.87
5-10' cut	lf	2,000	6.00	6.37
10-15' cut	lf	536	7.00	9.37
12", 0- 5' cut	lf	270	7.25	8.10
5-10' cut	lf	398	8.00	9.60
Reinf conc sewer, 18", 0- 5' cut	lf	300	4.10	6.50
5-10' cut	lf	116	5.10	9.00
30", 0- 5' cut	lf	350	9.60	13.25
5-10' cut	lf	200	11.00	15.00
10-15' cut	lf	150	13.00	20.50
48", 0- 5' cut	lf	300	26.50	34.35
Wall MHW/steps, 8" constr	vf	297	27.50	30.00
12" constr	vf	7	50.00	35.00
CI manhole rings & covers	ea	38	40.00	50.00
Crushed stone for subgrade	t	200	5.00	6.00
Excavation, solid rock	cy	250	15.00	15.00
Concrete, class A	cy	8	100.00	65.00
Select matl for base & bkf.	cy	500	2.00	5.00

Awarded: 10-15-58
Completion schedule: 75 cal days

MOBILE OFFICE UNITS...

Save TIME . . . and MONEY!!!

MOBILE OFFICE Units are low in cost . . . Built to your specifications . . . There's a unit to fill your every need.

Because MOBILE OFFICE Units are easy to move from job to job, they enable you to have office, engineering, paymaster and other facilities at every point of your operation.

These units are economical, time saving, rugged and durable. They are self-containing, and are available with air-conditioning, and can be fitted to your specifications.

MOBILE OFFICES are being used by major contractors and other major businesses throughout the United States. In every case they have proven their worth.

Remember, whatever your needs may be, a MOBILE OFFICE Unit can be built to fill your requirements.

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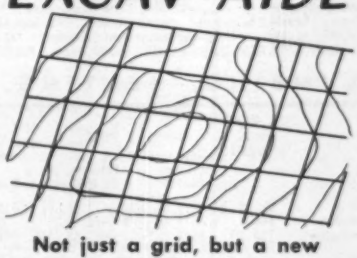

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Select the grid size best suited to your Site plan. Excav-Aide will give you Cut and Fill quantities directly in cubic yards without complicated arithmetic.

Made of extra heavy, durable clear plastic.

The ESTIM-AIDE CO.
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Please send me .... EXCAV-AIDE sets at $8.50 per set postpaid.
My check in amount of $..... is enclosed.
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Address .....
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YOUR MONEY BACK IF NOT SATISFIED.

Materials and Labor Prices

Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Wood Products, Glass, Explosives, Chemicals: Last, Nov. 20; Next, Dec. 18
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Nov. 27; Next, Dec. 25
- Wage Rates, Building Board, Lath, Insulation: Last, Nov. 27; Next, Dec. 25
- Cement, Aggregate, Ready-Mixed Concrete, Asphalt: Last, Dec. 4; Next, Jan. 8

IRON AND STEEL PRODUCTS—PER 100 LBS. BASE MILL PRICES

	STRUCT SHAPES—	PLATE CARBON STEEL	REINF BARS* billet	RIVETS ½-in. structural	SHEET PILING Base	STEEL RAILS Per Net Ton Standard	STEEL RAILS Per Net Ton Light	TRACK SUPPLIES Angle Bars	TRACK SUPPLIES Std Spikes	TRACK SUPPLIES Tie Plates	TRACK SUPPLIES Track Bolts
Birmingham Area	$5.50	$5.30	$5.675	$12.25	.....	$110.50	$130.00	$6.975	$9.75	$6.60	.....
Chicago Area	5.50	5.30	5.675	12.25	$6.50	110.50	130.00	6.975	9.75	6.60	.....
Pittsburgh Area	5.50	5.30	5.675	12.25	6.50	110.50	130.00	6.975	9.75	6.60	$14.75
Buffalo Area	5.50	5.30	5.675	12.25	6.50	110.50	130.00	6.975	9.75	6.60	14.75
Cleveland	.....	.....	5.675	12.25	6.50	.....	.....	.....	.....	.....	14.75
Youngstown Area	.....	.....	5.675	.....	.....	.....	.....	.....	9.75	.....	.....
Geneva	5.50	5.30	.....	.....	.....	.....	.....	.....	.....	.....	.....
Los Angeles	6.20	.....	6.375	.....	6.50	.....	.....	.....	9.75	6.75	.....
Pueblo	.....	.....	.....	.....	.....	.....	.....	69.75	9.75	6.60	.....

* Fairless Works, $5.575.

IRON AND STEEL PRODUCTS—F.O.B. WAREHOUSE, PER 100 LBS., BASE PRICE

	STRUCTURAL SHAPES Per 100 lb. base price	STRUCTURAL SHAPES Extras, New York:	REINFORCING BARS Per 100 lb., base price 5 tons to carload lot New billet	REINFORCING BARS Rail steel	REINFORCING BARS Extras, New York:	EXPANDED METAL LATH Per 100 sq. yd., carload lots Std. diamond mesh. 3.4 lb.	EXPANDED METAL LATH Std. ribbed 3.4 lb.	WELDED FABRIC REINFORCING Per 100 sq ft., carload lots fob mill
Atlanta	$9.40		9.25	$9.01		$52.00	$57.00	
Baltimore	9.675		8.70j	.....		42.00	46.50	
Birmingham	9.00t		8.99t	8.99t		57.00p K	63.00p K	
Boston	10.01s K		8.75K	8.75J		46.50 K	51.00 K	
Chicago	9.15E		7.16gu	7.16gu		52.00t	65.00t	
Cincinnati	9.86ak K		9.04tre	.....		44.50mn K	49.00mn K	
Cleveland	9.30t		7.70tf	.....		44.50 KL	49.00 KL	
Dallas	10.40M		9.00Q	9.00Q		44.00w	48.50w	
Denver	10.16		9.25c	.....		57.00n	63.00n	
Detroit	9.56		7.15g	.....		55.00	63.00	
Kansas City	9.82a		8.10N	.....		49.00	60.00	
Los Angeles	8.90df†		7.35r	.....		57.00r	63.00r	
Minneapolis	9.08Q		9.26Q	9.26Q		42.50	46.00	
Montreal	7.90–8.60C/8.20–8.90A		7.00/7.50PG	7.00/7.50PG		65.70h	70.20h	
New Orleans	.....		8.00gkz	.....		47.00	52.00	
New York	9.84‡s		8.60y	8.60y		52.00n	50.00ns	
Philadelphia	9.25/9.50M		7.60/8.25P	.....		42.50‡	47.00‡	
Pittsburgh	9.00y		7.35yO	.....		46.00‡ru	49.50‡ru	
St. Louis	9.48st		8.80wz	8.80wz		61.00lwz K	62.00lwz K	
San Francisco	9.90		9.85j	.....		52.00	56.00	
Seattle	9.80aD		8.85M	.....		67.50n D	72.00n D	
Toronto	9.20H		7.85	7.85		46.00pqJ	49.00pqJ	

EXTRAS, per cwt—Quantity (applies to LCL shipments only): under 1,000#, +$1.50; 1000–1999#, +$1.00; 2000–4999#, +$0.50; 5000–9999#, +80¢; 10,000–19,999#, +60¢; 20,000–29,999#, +30¢; 30,000–39,999#, +20¢; 40,000# & up, exempt. Size†: #2 & #3, +$2.00; #4, +$1.40; #5 +70¢; #6, #7, #8, +$1.00; #9 +$1.40; #10, #11 +50¢. Bending: heavy, +90¢; light (except in New York City and surrounding metropolitan area where bending must be done on the job), Engineer's list (details and placing from designs only), over 500 tons, +50¢ but not over 2000 tons, +50¢ but not over 5000 tons, +75¢ but not over $175; 5-10 tons, +85¢; but not over $300; 2000 tons, +$1.00 but not over $425. Min. charge $25. Design only: +60¢.

	WELDED FABRIC REINFORCING Per 100 sq ft., carload lots fob mill
4 × 16 in., No. 8 & 10 wires—Joliet, Ill., Donora, Pa., Monessen, Pa.	$7.04
4 × 12 in., No. 8 & 12 wires—Joliet, Ill., Donora, Pa., Monessen, Pa.	8.62
8 × 8 in., No. 8 & 8 wires—Joliet, Ill., Donora, Pa., Monessen, Pa.	14.17

*‡ Delivered. ** Aver. of Canadian & American. *a 2000–9999# *b 10,000–15,999#, fob city *c 20 tons or over *d 10,000–29,999# *e Intermediate struct'l *f Incl. delivering in free zone *g CL *h list price: dominion tax exempt; add provincial and municipal taxes *i add dominion, provincial and municipal sales taxes *j intermediate and hard grade *k fob city *l delivered: contractor to do unloading *m copper alloy *n LCL *o asphalt coated *p 500 sq. yd. or more. *q 2.5 lb *r less 2% disc. for cash *s 2,000–4,999# *t less ½% disc. 10 days *u add 7.5¢ switch *v incl 15¢ del. *w truck lots. *x add 2% sales tax *y add 15¢ del. *z add 10¢ del. *A American made. *C Canadian made. *D ½% for cash. *E 30,000# or over. *F Federal tax exempt for bldgs. *G add 10¢ del. *H 8.85 without tariff charges. *I 3 lb $60.00. *J 3 lb $86.00. *K less 2% disc. 10 days *L F.o.b. Youngstown plant *M 5,000–9,999# *N 2,000–19,999# *O Effective 8/15, just now available *P Effective Sept. '58. *Q 5 tons or over *R: revised.

PLUMBING, HEATING, WATER, SEWER AND DRAIN PIPE

	C. I. PIPE PRICE INDEXe	ASBESTOS CEMENT PIPE per lin. ft. f.o.b. city 6" Press Cl. 150	ASBESTOS CEMENT PIPE 12" Sew Cl. 1500	CLAY SEWER PIPE Per ft., delivered, car load ASTM C13-54 8 in.	CLAY SEWER PIPE ASTM C13-54 12 in.	CLAY SEWER PIPE ASTM C200-55T 24 in.	CLAY SEWER PIPE ASTM C200-55T 36 in.	CLAY DRAIN TILE† Per 1,000 ft., car load lots, f.o.b. ASTM C4-55 6 in.	CLAY DRAIN TILE† ASTM C4-55 8 in.	CONCRETE SEWER PIPE‡ Per ft., delivered ASTMC 14-55 12 in.	CONCRETE SEWER PIPE‡ ASTMC 14-55 24 in.
Atlanta	130.5	$1.56/1.69	$2.36/2.48	$0.53	$0.98	$....	$....	$209.00s	$334.00	$0.92m	$3.68m
Baltimore	140.4	1.56/1.69	2.19/2.30	.665	1.28	5.08T	12.71r	187.80	289.20	1.01	2.75m
Birmingham	125.8	1.56/1.69	2.26/2.37	.48mr	.90mr	3.88mrw	10.89mrw	273.00mr	440.00mr	1.25m	2.75m
Boston	143.5	1.58/1.71	2.19/2.30	.784mqr	1.512mqr	6.225mqr	.....	215.40mgA	330.60mgA	1.56mgA	3.47mg
Chicago	140.9	1.56/1.69	2.19/2.30	.93m	1.78m	7.52m	21.16m	220.00B	330.00B	1.30	4.00
Cincinnati	135.5	1.58/1.71	2.19/2.30	.665tA	1.2825tA	4.905tA	12.505A	240.00A	370.00A	.85mA	3.25mA
Cleveland	141.7	1.58/1.71	2.19/2.30	.602aC	1.215aC	4.77tC	12.505tC	155.40mC	240.60mC	1.20m	4.55m
Dallas	137.8	1.58/1.71	2.26/2.37	.550B	.955B	4.40bB	9.75bB	.....	.....	1.21BD	3.67BD
Denver	148.2	1.79/1.80	2.36/2.48	.48n	.87n	3.73n	.....	.....	.....	.75m	2.75m
Detroit	142.1	1.58/1.71	2.19/2.30	.90n	1.70n	6.80n	18.50n	182.00m	280.25m	1.10	4.05
Kansas City	138.5	1.60/1.71	2.26/2.37	.61r	1.105r	5.694br	12.08r	278.00r	493.00r	.95r	2.90r
Los Angeles	148.6	1.65/1.79	2.19/2.30	.74bl	1.61bl	6.42bl	15.36bl	370.00l	530.00l	1.176E	3.486/E
Minneapolis	149.9	1.60/1.75	2.26/2.37	.86mo	1.55mo	6.70mo	.....	.....	.....	2.13DEH	6.31DEH
Montreal	.....	.....	.....	1.13u	2.00u	7.00u	13.50u	288.00	545.00	1.17	3.11f
New Orleans	133.3	1.56/1.69	2.26/2.37	.541	1.007	5.47	.....	225.50p	470.34	1.41J	3.705J
New York	138.7	1.58/1.71	2.19/2.30	1.02	1.94	7.58	19.48	.....	.....	1.50‡B	3.60‡B
Philadelphia	138.0	1.56/1.69	2.19/2.30	.68	1.31	5.13y	14.25y	300.00‡	350.00‡	1.75h	4.20h
Pittsburgh	142.9	1.58/1.71	2.19/2.30	.602m	1.16m	8.14	22.17R	190.00	295.00	1.66D	3.93D
St. Louis	138.9	1.56/1.69	2.26/2.37	.62rz	1.15rz	4.92rz	2.68rz	200.00lrz	400.00lrz	1.45il	3.10kl
San Francisco	148.6	1.65/1.79	2.19/2.30	.78d	1.69d	6.72d	16.36d	320.00l	560.00l	1.05m	3.30m
Seattle	149.0	1.65/1.80	2.19/2.30	.72‡kk	1.50 kk	6.84‡k	.....	255.00‡ck	.....	1.95‡ky	4.75‡ky
Toronto	.....	.....	.....	.80F	1.50F	6.00F	.....	157.00F	280.00F	.92F	3.21F

	*WROUGHT STEEL PIPE (Full standard weight) Discount from list; see footnote	
Mill	2½ to 6 in., Lap Weld* Galv. %	Black %
Lorain, Ohio	.....	..... †
Alpuipa, Pa.	+11.00a	.....
Sparrows Pt., Md.	.....	3.25a
Benwood, W. Va.	+14.50a	3.25
Youngstown, O.	+15.50a	2.25ab
Indiana Harbor, Ind.	.....	.....
Sharon, Pa.	+14.50a	3.50a
Wheatland, Pa.	+12.75a	1.50d
Elna, Pa.	+9.25ab	+9.50ab
Fontana, Calif.	.....	0.75

	2½ & 3 in., Butt Weld* Galv. %	Black %
Lorain, Ohio	+3.50	1.00
Alpuipa, Pa.	base	.....
Sparrows Pt., Md.	.....	.75m
Benwood, W. Va.	+3.50	+4.50
Youngstown, O.	+3.50	base
Indiana Harbor, Ind.	+4.50	.....
Sharon, Pa.	+2.50	+4.50
Wheatland, Pa.	+3.50	base
Elna, Pa.	base	.....
Fontana, Calif.	+15.50	+9.50

	3½ & 4 in., Butt Weld* Galv. %	Black %
Lorain, Ohio	+3.50	1.00
Alpuipa, Pa.	+3.50	base
Sparrows Pt., Md.	+4.50	.....
Benwood, W. Va.	+2.50	+4.50
Youngstown, O.	+3.50	base
Indiana Harbor, Ind.	base	.....
Sharon, Pa.	+2.50	+4.50
Wheatland, Pa.	+3.50	base
Elna, Pa.	base	.....
Fontana, Calif.	+15.50	+9.50

*Threaded and coupled. a 3½ to 4 in. b Continuous weld. c to 1 5 and 6 in. d 6 in. † Production discontinued

*† Extra quality *§ Extra strength *‡ delivered. *a PRICE INDEXES for CENTRIFUGAL CAST IRON PIPE (Include carload freight allowed to city). These also serve as the HISTORICAL RECORD of THE $ PER NET TON PRICE of CLASS B, B&S, PIT CAST IRON PIPE. F.O.B. Foundry Price Indexes Birmingham, Ala., 125.8; Burlington, N. J., 134.6. *b Extra strength. *c 4-in., $140. *d SS361-A *f 21 in. *g culvert pipe; reinf., ASTM C 75–56 *h reinf., ASTM C 76–54 *i reinf., ASTM C 76–55 *j centrispun; no standard specs. in Canada. *k less 2% disc. for cash *l fob plant *m truck del. *n LCL del., fob truck *o loss ½% disc. 10th *p freight allowed to destination in city *q 35,000# minimum *r less 2% disc. 10 days *s 1 ft lengths *t 3 ft lengths *u CESA A 60–1941 *v standard strength *w SS; add 20% for d.a. *x fob city *y Reinforced *z Upper value in range estimating price based on both truck lots and less than truck lots; lower value truck lot quantities *A less 2% disc. 10th *B truckload, del *C less 2% disc. 15th *D ASTM 76–57 *E less 1% disc. 10 days *F less 5% disc. 30 days *G LCL *H CL *I fob origin, freight allowed *J reinf. B14-15 *R revised

* WROUGHT STEEL PIPE: Deduct discounts shown above from the following standard list consumers carload prices to get mill price. List prices per ft.(*based on approx. $200 per net ton): Butt Weld ⅛ in., 31½¢; ¼ in., 6¢; ⅜ in., 6¢; ½ in., 8½¢; ¾ in., 11½¢; 1 in., 17¢; 1¼ in., 23¢; 1½ in., 27½¢; 2 in., 37¢; 2½ in., 58½¢; 3 in., 76½¢. Lap Weld 3½ in., 92¢; 4 in., $1.20; 5 in., $1.48; 6 in., $1.92. Add freight, 3% transport tax for destination price. † Production discontinued November 1957

WROUGHT IRON PIPE: List prices per ft. same as for wrought steelpipe, but add following "discounts" to get Pittsburgh mill price: Butt Weld—1 in. black, + 66.54, galv. + 98.77; 1¼ in. black, + 68.54, galv. + 98.23, 1½ in. black, + 61.78 galv. + 91.22; Lap Weld—2½ in. to 3 in. black + 67.98 galv. + 98.77; 4½ in. to 6 in. black + 64.74 galv. + 96.88 Add freight rates plus 3% transportation tax to get destination price.

Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, Reports
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

▲ N. H., Dover—BA 12/30—P. Wks. Dpt., City Hall, sewage treatment plant, sewers, appurtenances. $1,000,000. Plans deposit $100. Anderson, Nichols Co., 150 Causeway St., Boston, Mass., engrs. CD 9/10/57.

▲† Me., Limestone—CENTRAL HEATING PLANT, etc.—BA On Or About 1/7—U. S. Eng., 424 Trapelo Rd., Waltham 54, Mass., central heating plant addns. and extension to H.T.H.W. distr. sys., Loring Air Force Base, ENG-19-016-59-28. $1,250,000-$1,750,000. Plans deposit $10. CD 9/8.

BUILDINGS—BA

Me., Bangor—HOSPITAL—BA 12/19—Bangor Osteopathic Hospital, 292 State St., hospital, Stillwater Ave. $450,000. Plans deposit $40. Eaton W. Tarbell & Assoc., Inc., 173 Exchange St., archt. CD 7/28.

N. H., Manchester—SUPERMARKET—BA 1/7—Ferretti's Supermarket, Hanover St., supermarket. $350,000. Plans deposit $50. Samuel T. Dubitsky, 41 N. Main St., Fall River, Mass., archt.

HEAVY CONSTRUCTION—LB & CA

▲† J. R. Cianchette, 120 Main St., Pittsfield, Me., LB $1,193,573, pavements and utilities, Loring Air Force Base, ENG-19-016-59-44, LIMESTONE, ME. U. S. Eng., 424 Trapelo Rd., Waltham, Mass. Bids Nov. 26. CD 10/23.

† Consolidated Constr. Co., 807 Congress St., Portland, Me., CA $607,636, readiness crew bldgs. and utilities (SAC) Loring Air Force Base, ENG-19-016-59-39, LIMESTONE, ME. U. S. Eng., 424 Trapelo Rd., Waltham, Mass. Bids Nov. 21. CD 11/25, under LB.

† Five Boro Constr. Co., 2 Lafayette St., New York, N. Y., LB $667,000, est. $753,800, organizational maintenance hangar, Loring Air Force Base, ENG-19-016-59-40, LIMESTONE, ME. U. S. Eng., 424 Trapelo Rd., Waltham, Mass. Bids Nov. 25. CD 10/31.

▲ NEW HAMPSHIRE—Dpt. P. Wks. & Hys., Concord, R. G. Watkins & Son, Mill Yard, Amesbury, Mass., CA $1,364,234, hot b. conc. and 3 steel beam bridges 255, 127 and 95 ft., 1.194 mi. Concord and Canterbury, Merrimack Co. Bids Nov. 6. CD 10/28.

▲ MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, Bids opened 11/25, Campanella & Cardi Constr. Co., 780 Jefferson Blvd., Warwick, R. I., LB $923,023, est. $1,015,941, hy. and bridge, Interstate Rte. 95 E. 1-95E-3 (5-3), Rehoboth. CD 11/11.

MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, Bids opened 11/25, Central Constr. Co. of Lawrence, P. O. 1053, Lawrence, Mass., LB $623,515, est. $864,365, hy. and bridge, Interstate Rte. 95. FAP No. 1-W95-6(4) 63, Westford. CD 11/18.

▲◇ Perini Corp., 73 Montwait Ave., Framingham, Mass., CA $3,028,947, est. $3,444,405, airfield pavements (FY 59) Otis Air Force Base, ENG-19-016-59-34, FALMOUTH, MASS. U. S. Eng., 424 Trapelo Rd., Waltham, Mass. Bids Nov. 6. CD 11/11, under LB.

▲† Hartwell Co., Inc., 33 Sutton Ave., East Providence, R. I. CA $1,519,500. fleet berthing piers and steam facilities, U. S. Naval Base, NBv 11078, Spec. 11078/56, NEWPORT, R. I. 1st Naval Dist., 495 Summer St., Boston, Mass. Bids Nov. 7. CD 11/12, under LB.

CONNECTICUT—State Hy. Dpt., 165 Capitol Ave., Hartford,
Oneglia & Gervasini, Inc., Casson Ave., Torrington, Conn., CA $784,749, Proj. 65-62, hot b. conc. paving, incl. 3 structures, 20,204 lin. ft. relocation Rt. 72, Fed. Aid Proj. S-81(1), Harwinton and Torrington. Bids Oct. 27, awarded Nov. 28. CD 11/19, under LB.
Town, Town Hall, Clinton, Conn., Owner Builds, $45,000, 400 ft. long, 10 ft. wide at top, stone jetty, Town Beach, CLINTON, CONN.

BUILDINGS—LB & CA

Roycraft Constr. Co., Inc., 55 Nelson St., Manchester, N. H. LB $537,631. West High SCHOOL addns., alterations, Notre Dame Ave., MANCHESTER, N. H. City, Jt. School Bldg. Comn., City Hall, Manchester, N. H. Bids Nov. 24. CD 11/18.
M. J. Walsh & Sons, Inc., 14 Shawmut Ave., Holyoke, Mass., LB $561,370, U-58-1 Contr. 1, MAINTENANCE BLDG. for University of Massachusetts, AMHERST, MASS. Commonwealth of Mass., University of Mass., c/o Div. Bldg. Constr., 38 Chauncy St., Boston, Mass. Bids Nov. 26. CD 11/7.
Innamorati Bros., Inc., 137 Clark St., Clinton, Mass., LB $403,119, est. $400,000, JUNIOR HIGH SCHOOL addn., HOLDEN, MASS. Town, Supt. Schools, Main St., Holden, Mass. Bids Nov. 25, CD 11/7.
▲ J. Bernard Warner, 471 Glenbrook Rd., Glenbrook, Conn. CA $1,000,000 MOTOR HOTEL, off Conn. Tpk., Darien Exit, DARIEN, CON. Guildway Homes, Inc., Darien, Conn.
Harry Williams, 52 Main St., Southport, Conn., Owner Builds, $750,000, 75 HOUSES, Route 1, Fort Hill, GROTON, CONN.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

▲ NEW YORK—BA 12/17—Triborough Bridge & Tunnel Auth., Admin. Bldg., Randall's Island, New York, Zone 35, Throgs Neck Bridge Contr. No. TN-11, Queens Interchange. Plans deposit $45. Extended date. CD 11/12.
Pa., Bradford—BA 12/22—Bradford Sanitary Auth., Bradford, Contr. No. 5, sewage treatment and refuse disposal plant; general constr.; contr. 6 plumbing; Contr. 7 heating; and Contr. 8 electrical work. Plans deposit $50. The Chester Engineers, 601 Suismon St., Pittsburgh 12, engrs.
▲† Md., Fort George G. Meade—HANGAR, etc.—BA 12/23—U. S. Eng., 24th St. and Maryland Ave., Baltimore, Zone 18, 1 story 100 x 120 ft. hangar, 2 story on each side 17 x 128 ft., 1 story 30 x 50 ft. Administrations and operations bldg., boiler room, control tower, sewage pump station, utilities and site Imprvs. Over $1,000,000. Benjamin A. Beavin Co., 104 E. 25th St., Baltimore, Zone 18, engr. CD 9/5, under Public Buildings.

BUILDINGS—BA

▲ Md., Towson—SCHOOL—BA 12/16—Baltimore Co. Bd. Educ., Aigburth Rd., Zone 4, 1 story Franklin Senior High School, Reisterstown, $3,000,000. Plans deposit $100. Hopkins & Pfeiffer, 10 E. Mulberry St., Baltimore, Zone 2, archts. James Posey, 10 E. Pleasant St., Baltimore, Zone 2, engr. Van R. P. Saxe, 1701 St. Paul St., Baltimore, Zone 2, structural engr. CD 3/3.
▲ N. Y., Brooklyn—SCHOOL—BA 12/17—Supt. School Bldgs., Bureau Constr., 4th Fl., 42-15 Crescent St., Long Island City Zone 1, general constr., plumbing and drainage, heating, and ventilating, electrical work and lighting fixtures for new addn. to and modernization of existing Public School 213, Linden Blvd. and New Jersey Ave. Plans deposit $25 general, $10 each for trades. CD 7/23.
▲ N. Y., New York—SCHOOL—BA 12/18—Supt. School Bldgs., Bureau Constr., 4th Fl., 42-15 Crescent St., Long Island City, Zone 1, general constr., plumbing and drainage, heating and ventilating, electrical work and lighting fixtures Public School 5, E. 149th St. between Jackson and Concord Aves., Bronx Boro. Plans deposit $25 general, $8 each, mechanical trades. CD 3/31.
▲ Md., Towson—SCHOOL—BA 12/23—Baltimore Co. Bd. Educ., Aigburth Rd., Zone 4, 1 story masonry Ridgely Junior High School, near here. $1,500,000. Plans deposit $100. Gaudreau & Gaudreau, 330 N. Charles St., Baltimore, Zone 1, archts.

HEAVY CONSTRUCTION—LB & CA

Ralph Tomasetti & Co., 1163 58th St., Brooklyn 19, N. Y., LB $475,951 (9 bidders) No. 6 storm water sewer in 202d St. from 100th Ave. to north of 99th Ave.; northerly thru park lands to Jamaica Ave. and 202d St. easterly; 202d St. easterly from Jamaica to 90th Aves., sanitary sewers in 202d St. easterly, west side from Jamaica Ave. to 90th Ave., 202d St. west side from 100 Ave. to point 55 ft. south of 99th Ave. Fourth Ward, Queens Boro, NEW YORK. President Queens Boro, Rm. 228, Queens Boro Hall, 120-55 Queens Blvd., Kew Gardens 24, N. Y. Bids Nov. 24. CD 11/18.
▲ NEW JERSEY—State Hy. Dpt., Kenneth D. Rice, secy., 1035 Parkway Ave., Trenton,
N. J.—A. J. Cunningham & Sons, 2850 Brunswick Pike, Trenton, N. J., CA $870,275, wid'n., resurf. 2.908 mi. U. S. Rte. 1, Sect. 3, from ¾ mi. south of Alexander Rd. to State Police barracks, Mercer and Middlesex Counties. Bids Nov. 12, awarded Nov. 25.
N. J.—Union Paving Co., Inc., Wynnewood, Pa., CA $749,808, wid'n., resurf. 3.994 mi. U. S. Rte. 30, Sect. 2, from Wellington Ave. to Bell Ave., Camden Co.;
N. J.—Thomas Nicol, Inc., Farmingdale, N. J., CA $723,277, dualization 1.273 mi. U. S. Rte. 202, Sect. 3, from Huyler Rd. to 700 ft. east of C.R.R. of New Jersey in Branchburg and Bridgewater Twps., Somerset Co. Grand total $2,343,360. CD 11/17, under LB.
▲ H. I. Lewis Constr. Co., 43 E. Main St., Middletown, Pa. LB $1,047,292 (12 bidders) Scranton Flood Control Proj., Unit No. 2, Roaring Brook, concrete work and steel reinforcement, Scranton, Lackawanna Co., PENNSYLVANIA. Dpt. Forests & Waters, 512 Educ. Bldg., Harrisburg, Pa. Bids Nov. 25. CD 10/29.
▲ PENNSYLVANIA—Pa. Hy. & Bridge Auth., 506 North Office Bldg., Harrisburg,
Pa.—The Lane Constr. Corp., 965 E. Main St., Meriden, Conn. CA $3,313,581, 21,062 ft. divided hy. of rein.-con., 24 ft. wide each side 60 ft. earth divisor; 3 pairs alt. superstructure bridges, section Penn-Can Hy. (Proj. 819-3) FAI Lenox Twp., Susquehanna Co.;
Pa.—Central Penna. Quarry Strip & Concrete Co., 270 S. Pine St., Hazelton, Pa. CA $1,491,232. 9,957 ft. divided hy. of rein.-con., 24 ft. wide each side 60 ft. earth divisor, section Penn-Cann Hy. (Proj. 820-3) FAI New Milford Twp., Susquehanna Co. Bids Oct. 30. CD 11/5, under LB.
▲ PENNSYLVANIA—Pa. Hys. Dpt., 506 North Office Bldg., Harrisburg,
Trumbull Constr. & Asphalt Co., Rte. 51, Large, Pa. CA $1,124,393, 322,643 ft. wid'n. existing road with crushed aggreg. base variable in width and surf. new and existing base with bit. surf. 1 rein.-con. slab bridge, T.R. 8, Hampton-Richland Twps., Allegheny Co. Bids Oct. 30. CD 11/4, under LB.
MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore 2, bids opened 11/25,
Edgell Constr. Co., Mary St., Dover, Del., LB $431,296 (6 bidders), grading, drainage, surf. and relocation 3.2 mi. State Rte. 279, Elkton to Delaware State Line, CE-400-1-220, Cecil Co. CD 11/12.
▲ The Leo Butler Co., 9217 51st Ave., College Park, Md., LB $1,172,892, Imprvs. to Druid Lake Reservoir-Druid Hill Park, BALTIMORE, MD. City, Bureau Water Supply, 505 Municipal Bldg., Baltimore 2, Md. Bids Nov. 26. CD 11/17.
Princemont Constr. Corp., 322 N. Stonestreet Ave., Rockville, Md., CA $595,601, paving and wid'n. Bladensburg Rd. N.E. between 17 and New York Ave., (Fed. Aid Proj. DF-65 (3)) WASH., D. C. D. C. Govt. Dpt. Hys., 499 Pa. Ave. N.W., Wash., D. C. Bids Nov. 6, awarded Nov. 21. CD 11/12, under LB.

BUILDINGS—LB & CA

† Fischer Malik Inc., 11 Moffitt Blvd., Bay Shore, Long Island, N. Y., LB $598,000 Base Bid (20 bidders) MEMORIAL CHAPEL at U. S. Merchant Marine Academy, IFB 81-MA 59, KINGS POINT, N. Y. Div. Purchase & Sales, Maritime Admin., Wash., D. C. Bids Nov. 25. CD 10/29.
▲ Diesel Constr. Co., 24 W. 58 St., New York, N. Y., CA, 2 story, bsmnt., 200,000 sq. ft. DEPARTMENT STORE, Rte. 4, near HACKENSACK, N. J. Bloomingdale Bros., Div. Federated Stores, 1440 Broadway, New York, N. Y. Parsons, Brinckerhoff, Hall & Macdonald, 165 Broadway, New York 6, N. Y., archts.-engrs. CD 7/15.
Gus Batz, Hackettstown, N. J., CA $543,021, general contract Regional HIGH SCHOOL, West Amwell Twp., near LAMBERTVILLE, N. J. South Hunterdon Regional High School Dist., Lambertville, N. J. Bids Nov. 10. CD 10/24.

(Continued on Page 94)

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works, $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of Interest to American contractors.

By Regions & Classes of Construction
(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED
New England — **Middle West**
Middle Atlantic — **West of Mississippi**
South — **Far West**
PROPOSED WORK
Water Supply — **Public Buildings**
Sewers, Waste Disposal — **Mass Housing**
Bridges — **Commercial Buildings**
Streets & Roads — **Industrial Buildings**
Earthwork, Waterways — **Unclassified**

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

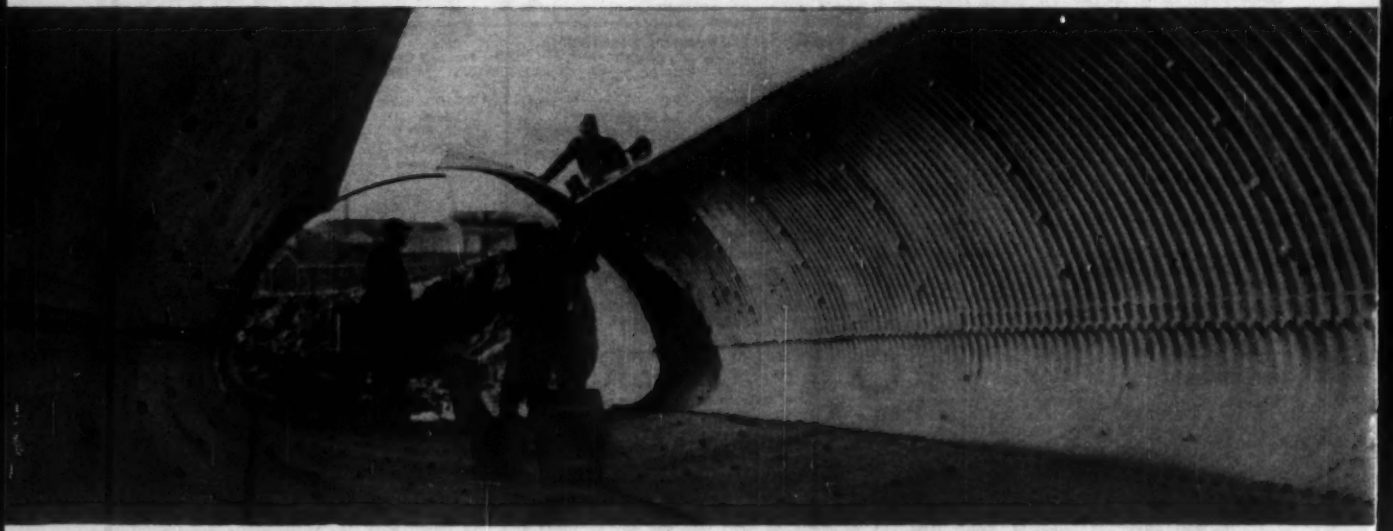
Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over
ENR Engineering News-Record
CD Construction Daily

For additional reports see Construction Daily.

KEEP OUR ROADS ON THE GO

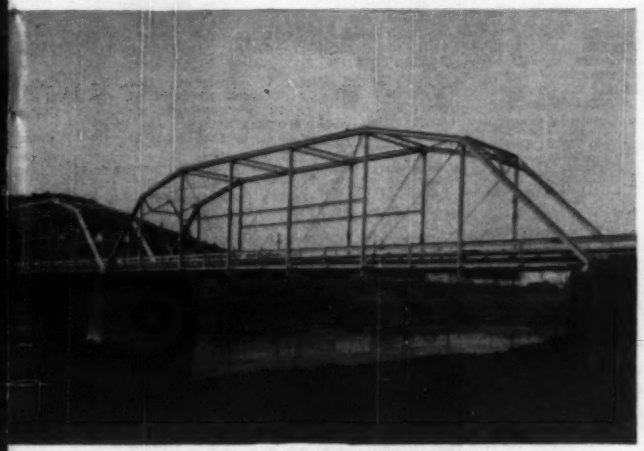
American build more road



Erected in just 5 days. How the dimensional accuracy of USS AmBridge Sectional Plate assures precision fit in the field is demonstrated in the installation of the long pipe-arch shown above. Measuring 112′ long, having a 12′6″ span and a 7′11″ rise, this giant drainage structure was erected in just five working days by a five-man crew, plus crane.

Erected in 4 working days. Above, right: a modern highway-access bridge over railroad tracks at North Branch, Maryland. There were 206 tons of steel involved—one double-plate girder span of 103 feet, and two beam spans (35 feet and 75 feet). Steelwork was erected and riveted in four working days by the American Bridge construction team.

Weight and maintenance problems solved by reflooring old bridge with USS AmBridge I-Beam-Lok



The bridge over the West Branch of the Susquehanna River in Clearfield, Pa., has been in continuous use for almost a half century. Its old wooden floor has been patched and resurfaced time and time again. Finally, it was decided to completely refloor the 280′ long x 17′6″ wide bridge with something permanent. But, switching to another type flooring would not be a simple matter, for existing 12″ stringers were too light to carry any additional weight. In fact, it was desirable to lighten the flooring dead load, rather than increase it.

The problem was solved by using 5″ open-type USS I-Beam-Lok. Weighing only 18.8 psf., this modern lightweight steel flooring was erected on the old stringers *without secondary supports*...a total of 4,894 sq. ft. (92,400 lbs.) of it being required for the roadway floor. I-Beam-Lok, being steel, also greatly increased the strength of the bridge and will considerably reduce upkeep and snow-removal costs.

The reflooring was done by the High Welding Company, Lancaster, Pa., I-Beam-Lok specialists.

For further information about the advantages of I-Beam-Lok, ask for a copy of our 32-page catalog.

USS, I-Beam-Lok and AmBridge are registered trademarks

Bridge helps you for the money!

American Bridge Division of USS United States Steel

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(Continued from page 91)

▲ **A. A. LaFountain, Inc.**, 159 Beech St., Hackensack, N. J., LB $1,339,400, general contract COURT HOUSE, NEW BRUNSWICK, N. J. Bd. Freeholders Middlesex Co., Court House, New Brunswick, N. J. Bids Nov. 25. CD 9/26.

▲ **Visbeen Constr. Co.**, 555 Goffle Rd., Ridgewood, N. J., CA $1,250,000, est. $1,000,000, CHURCH and CHAPEL, RIDGEWOOD, N. J. Archdiocese of Paterson and Parish of Our Lady of Mount Carmel, 65 Passaic St., Ridgewood, N. J. CD 3/19.

Morrow Bros. Inc., 2315 N. Charles St., Baltimore 18, Md., LB $424,650 (15 bidders), brick, concrete, steel, block NATIONAL GUARD NORTHWEST ARMORY, BALTIMORE, MD. State Dpt. P. Imprvts., 506 Park Ave., Baltimore 1, Md. Bids Nov. 25. CD 11/20.

▲ **Charles H. Tompkins Co.**, 1737 K St. N. W., Wash., D. C. CA Est. $1,000,000, constr. 9 story OFFICE BLDG., 17 and DeSales Sts. N.W., WASH., D. C. National Coal Assoc., 802 Southern Bldg., Wash., D. C. CD 7/18.

SOUTH

HEAVY CONSTRUCTION—BA

Ala., Andalusia—BA 12/18—City, City Hall, 2 sewage treatment plants, outfall sewer lines, $835,000. Plans deposit $45. McDonald & Hooper, Andalusia, and Harry Hendon & Assocs., 10 Office Park Circle, Mountain Brook, engrs. CD 8/14.

La., Lake Charles—READINESS CREW BLDG.—BA On Or About 1/13—U. S. Eng., P. O. Box 1229, Galveston, Tex., 22,781 sq. ft. readiness crew bldg. at Chennault Air Force Base, ENG-41-243-59-27. $600,000-$800,000. CD 9/9.

BUILDINGS—BA

† **La., New Orleans**—APRON-OPERATIONAL—BA 12/18—Officer in Charge of Constr., Eighth Naval Dist., Bldg. 16, U. S. Naval Station, New Orleans (Algiers), La., 44,100 sq. yd. rein.-conc. parking apron extension with 10 ft. stabilized shoulders, Naval Air Station, Alvin Callender Field. NBy-22470, Spec. No. 22470/58. $500,000-$1,000,000.

▲ **Tenn., Knoxville**—AUDITORIUM COLISEUM—BA 12/19—City, City Hall, combined auditorium-coliseum. $3,000,000. Painter, Weeks & McCarty, 618 Church Ave., S.W., archts. CD 1/13.

▲† **La., Bossier City**—HOUSING—BA 1/8—U. S. Eng., P. O. Box 867, Little Rock, Ark., 200 Capehart family housing at Bossier Base, ENG-03-050-59-27. $3,000,000-$5,000,000. CD 7/2.

HEAVY CONSTRUCTION—LB & CA

▲ **WEST VIRGINIA**—State Road Comn., Charleston, Zone 5, Bids opened 11/25,

Keeley Constr. Co., Box 208, Clarksburg, W. Va., LB $1,984,599, grading, draining 1.505 mi. Interstate Rte. 64, ½ mi. west of Sec. Rte. 44 to Kanawha River; b. conc. paving 0.598 mi. W. Va. Rte. 17 at Intersection of Interstate Rte. 64, Proj. I-64-1(23) 41 and S.206(6), Putnam Co., CD 11/19.

WEST VIRGINIA—State Road Comn., Charleston, Zone 5,

Kyova Constr. Co. & Southern Contg. Co., 1639 7 Ave., Huntington, W. Va., CA $569,477, c. conc. 0.589 mi. Camden Ave. in Parkersburg on W. Va. Rte. 81, Proj. DUS 669(2), Wood Co. Bids Nov. 13, awarded Nov. 17, CD 11/19, under LB.

▲ **A. C. Samford, Inc.**, P. O. Box 1229, Albany, Ga. LB $1,359,900, contr. 1 Haw River Sewage treatment plant, BURLINGTON, N. C. City of Burlington, City Hall, Burlington, N. C. Bids Nov. 20, CD 10/7;

Tri-Mac Co., Greenville, N. C. LB $190,014. Contr. 6, Haw River Sewage treatment plant (Burlington, N. C.);

Talley Electric Co., 1109 Battleground, Greensboro, N. C. LB $75,900, Contr. 4, Haw River Sewage treatment plant (Burlington, N. C.)

▲ **FLORIDA**—State Rd. Dpt., at Co. Comrs. Bd. Room, Court House Annex, Pensacola, Bids opened 11/21,

Noonan Constr. Co., Inc., Drawer 470, Pensacola, Fla., LB $3,375,720, 4-lane 9 in. concrete pavement, sand-clay base Type 1, b. conc. surf. course Type 1-A surf. treatment, drainage structures, six hy. grade seoaration bridges (single and dual), etc., 5.98 mi. FAI Proj. No. 0-10-1(3) 5, Job No. 48260-3402 SR 8, Escambia Co. CD 10/21.

▲ **J. E. Milam Constr. Co.**, 8940 1st Ave. S., Birmingham, Ala., LB $1,982,609, est. $1,816,000 (7 bidders) sewage disposal plant, HUNTSVILLE, ALA. Huntsville City Council, City Hall, Huntsville, Ala. Bids Nov. 25. CD 10/29.

M. E. Gilliog Constr. Co., Monett Mo., OA $573,075 (6 bidders) Contr. No. 1 WW sys. imprvs. being White River Dam, incl. earthen section gravity spillway open weir section, etc. FAYETTEVILLE, ALA. City, City Hall, Fayetteville, Ala. W. R. Holway & Assocs., 1850 S. Boulder, Tulsa, Okla., engrs. Bids Nov. 20, CD 2/4/53.

▲ **MISSISSIPPI and ARKANSAS**—Mississippi State Hy. Dpt., Jackson, Miss. and Arkansas State Hy. Comn., Little Rock, Ark. Bids opened 11/25,

Miss. and Ark.—Kansas City Bridge Co., 298 Broadway, Kansas City, Mo. and **Guy H. James Constr. Co.**, 4901 N. Sewel, Oklahoma City, Okla. (joint bid), LB $2,629,988, Job 11631, Contr. 1, sub-structure superstructure and embankment work for Mississippi River Bridge at Helena, Phillips Co., Ark. and Coahoma Co., Miss.;

Miss. and Ark.—John F. Beasley, Constr., Merchantile Bank Bldg., Dallas, Tex., LB $3,664,238, Job 11634, Contr. 1, sub-structure superstructure and embankment work for Mississippi River Bridge at Helena, Phillips Co., Ark. and Coahoma Co., Miss. CD 9/11.

▲ **MISSISSIPPI and ARKANSAS**—Mississippi State Hy. Dpt., Jackson, Miss. and Arkansas State Hy. Comn., Little Rock, Ark., Bids opened 11/25,

Miss. and Ark.—Kansas City Bridge Co., 298 Broadway, Kansas City, Mo. and **Guy H. James Constr. Co.**, 4901 N. Sewel, Oklahoma City, Okla. (joint bid), LB $569,246, Job 11632, Contr. No. 2, approaches to River Bridge, substructures, consisting of piers and abutments for approaches to river bridge at Helena, Phillips Co., Ark. and Coahoma Co., Miss.;

Miss. and Ark.—Peter Kiewit & Sons, 1024 Omaha National Bank Bldg., Omaha, Neb., LB $599,620, Job 11633, Contrs. 3 and 6, relief structures, substructures and superstructure consisting of constr. piers and abutments and fabrication and erection of superstructure and deck at Helena, Phillips Co., Ark. and Coahoma Co., Miss.;

Miss. and Ark.—John F. Beasley Constr. Co., Merchantile Bank Bldg., Dallas, Tex., LB $856,956, Job 11635, Contr. No. 5-approaches to River Bridge, superstructure, consisting of fabrication and erection of superstructure metalwork and deck constr. for approaches to Mississippi River Bridge, at Helena, Phillips Co., Ark. and Coahoma Co., Miss.;

Miss. and Ark.—R. B. Potashnick Constr. Co., Box 423, Cape Girardeau, Mo., LB $818,033, Job 11637, Contr. No. 7, embankment and paving 1.23 mi. for Mississippi River Bridge at Helena, Phillips Co., Ark. and Coahoma Co., Miss. CD 9/11.

▲ **MISSISSIPPI**—State Hy. Dpt., T. C. Robbins, dir., Jackson,

H. J. Happel Co., 5501 E. Admiral, Tulsa, Okla., CA $500,247, bridge 0.143 mi. Interstate Hy. 55 between Tillatoba and Oakland, Proj. I-091-3(9) (Old) I-55-3(9) 217 (new); CA $635,084, bridges 0.093 mi. 2 hy. underpasses, incl. dual hy. overpass and 1 dual bridge on Interstate Hy. between Oakland and Pope., Proj. I-091-3 (10) I-55-3 (10) 224 (New) Contr II, both in Yalbousha Co. Bids Dec. 25. DC 11/14.

▲ **MISSISSIPPI**—State Hy. Dpt., T. C. Robbins, dir., Jackson,

Miss.—Mid-State Paving Co., Lamar Bldg., Meridian, Miss., CA $89,187, base and double bit. surf. treatment 1.572 mi. Hy. 43 between Pelahatchie and Pisgah, Proj. DS-0428 (5) A Contr. 1; CA $149,922, base and double bit. surf. treatment 6.58 mi. Hy. 25 between Carthage and Renfro, Proj. F-056-1 (12), Leake Co.;

Miss.—Dixie Contractors, 2965 S 3, Memphis, Tenn., CA $962,538, grading, drainage, culverts 6.674 mi. Interstate Hy. 55 between Oakland and Pope, Proj. I-091-3(10) (Old) I-55-3(1) 224 (New), Contr. 1, Yalobusha Co.; CA $762,620, grading, drainage, culverts 6.235 mi. Interstate Hy. 55 between Tillatoba and Oakland, Proj. I-091-3(9) (Old I-55-3(9) 217 (New) Contr. 1, Yalobusha Co.;

Miss.—Cobb Bros. Constr. Co., Inc., 315-33 Ave. S, Meridian, Miss., CA $133,544, base and double bit. surf. treatment 3.474 mi. Hy. 503 between Hero and Hickory, Proj. S-0337 (2) A, Newton Co.;

Miss.—Reed & Sheppard, Belzoni, Miss., CA $74,167 base and double bit. surf. treatment 0.22 mi. Hy. 14, Goodman, Proj. S-0638(2) A, Holmes Co.;

Miss.—Phillips Contr. Co., Inc., Columbus, Miss., CA $285,749, base asph. pavement and double bit. surf. treatment 4.423 mi. U. S. Hy. 45 between Columbus and Aberdeen, Proj. FU-002-4(6), Lowndes Co.;

Miss.—Pigford Bros., Inc., Hy. 11 S, Meridian, Miss. CA $317,065, base, bit. surf. and bridge 0.185 mi. Hy. 3 between Redwood and Eldorado. Proj. F-010-1 (8), Warren Co. Grand total $2,774,692. Bids Nov. 25. CD 11/14.

McDonough Constr. Co., Box 7102, New Orleans, La., LB $568,359 (10 bidders), pile supported foundations for grain tanks, conveyor tunnels, and site work, NEW ORLEAN, LA. Port of New Orleans, 2 Canal St., New Orleans, La. Bids Nov. 21. CD 11/3.

† **H. R. John**, 1112 E. Broadway, Louisville 4, Ky., LB $429,220 Base Bid (11 bidders), 26,200 sq. ft. brick, concrete block, concrete slab operations and training bldg. Wing Group, Air National Guard, Standiford Field, ENG-15-029-59-18, LOUISVILLE, KY. U. S. Eng., P.O. Box 59, Louisville, Zone 1, Ky. Bids Nov. 25. CD 10/24.

▲ **TENNESSEE**—State Hy. Dpt., Nashville,

Tenn.—McDowell & McDowell, Murfreesboro Rd., Nashville, Tenn. CA $1,874,611, grade, etc. 5 bridges 8 mi. Int. Rte. 24 at Rutherford Co. Line, Nashville, Davidson Co.; CA $2,426,247, grade, 7 bridges, etc. 2.5 mi. Int. Rte. 40, Dandridge, Jefferson Co.;

Tenn.—Kingsport Paving Co., Kingsport, Tenn. CA $882,326, paving 6.3 mi. relocated State Rte. 1 between Kingsport and Mill Point, Kingsport, Sullivan Co.;

Tenn.—Cecil Morgan, Clarksville, Tenn. CA $769,885. grade, etc. 2.6 mi. relocated Front St. in Clarksville, Montgomery Co.;

Tenn.—Summers-Taylor, Johnson City, Tenn. CA $706,722, grade, etc. 1.5 mi. State Rte. 24 in Johnson City, Washington Co.;

Tenn.—Southern States Paving Co., 900 44th Ave. N., Nashville, Tenn. CA $529,034, paving 17.8 mi. State Rte. 99, Columbia-Hohenwald, Lewis and Maury Counties;

Tenn.—M. C. West, Columbia, Tenn. CA $877,566, grade 6 bridges, etc. 2.2 mi. State Rte. 29, Dayton, Rhea Co.;

Tenn.—Malone Bros., Greeneville, Tenn. and **Cofer & Tedder**, Harriman, Tenn. CA $1,606,970, grade, etc. 6.6 mi. Int. Rte. 40. Harriman, Roane and Loudon Counties. Grand total $9,673,361. Bids Nov. 14, awarded Nov. 22. CD 11/19, under LB.

▲ **TENNESSEE**—State Hy. Dpt., Nashville,

rejected bids Nov. 14, paving 4.7 mi. Int. Rte. 40. Kingston, Roane Co. LB $1,586,511. CD 11/19, under LB.

▲ **Stein Constr. Co.**, 1077 Duncan Ave., Chattanooga, Tenn. CA $1,315,562, 100 mi. water main KNOXVILLE, TENN. Northeast Knox Utility Dist., Knoxville, Tenn. Awarded Nov. 21. CD 3/4/54.

BUILDINGS—LB & CA

A. B. Newton & Co., Box 191, Vidalia, Ga., CA $597,839 HOUSING, MONROE, GA. Monroe Housing Auth., Monroe, Ga., Bids Nov. 12. CD 11/21, under LB.

▲ **Southern Builders**, Municipal Bldg., Florence, Ala., CA $1,000,000. 5 story, 42,000 sq. ft. OFFICE BLDG., FLORENCE, ALA. Court Corp. c/o contractor.

▲ **Farnsworth & Chambers Co.**, Box 322, New Orleans, La., LB $1,746,000 (15 bidders) 4 story, 40 ft. and 7 story, 40x221 ft. L-shaped (2 wings) rein.-con. and brick Men's DORMITORY, NEW ORLEANS, LA. Tulane University, 6823 St. Charles Ave., New Orleans, La. Bids Nov. 25. CD 10/30.

O. B. Davis Constr. Co., 641 N. Market St., Chattanooga, Tenn. CA Est. $500,000. BOWLING CENTER, CHATTANOOGA, TENN. M. A. Lightman, Jr., c/o contractor.

▲ **Forcum-Lannom Constr. Co.**, Dyersburg, Tenn. CA $1,635,364. low rent HOUSING, consisting 65 unit proj. for whites and 90 unit proj. for Negroes, DYERSBURG, TENN. Dyersburg Housing Auth., Dyersburg, Tenn. Bids Nov. 4, awarded Nov. 21. CD 11/20, under LB.

▲ **Allen Bros. & O'Hara**, 3536 Walker Ave., Memphis, Tenn. CA $1,000,000. 3 story, 100 room INN with restaurants and 3 meeting rooms, swimming pool, etc., MEMPHIS, TENN. Holiday Inns of America, 3736 Lamar St., Memphis, Tenn. W. W. Bond, 4985 Summer Ave., Memphis, Tenn., archt. Awarded Nov. 20.

▲ **Southern Builders**, 3355 Poplar St., Memphis, Tenn. CA Est. $1,000,000. MEDICAL OFFICE BLDG., MEMPHIS, TENN. Union Claybrook Corp., c/o contractor.

J. S. Cartwright, 438 Murfreesboro Rd., Nashville, Tenn. Owner Builds. $500,000. Guill Heights RESIDENTIAL SUBDIVISION, NASHVILLE, TENN.

Gaines & Gregory and Wright & Sadler Co., Gallatin Rd., Madison, Tenn. Separate Contracts $400,000. Primrose Acres RESIDENTIAL SUBDIVISION, NASHVILLE, TENN.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

Ill., Chicago—SWIM POOLS, etc.—BA 12/16—Chicago Park Dist., 425 E. 14 St., Zone 5, 42 x 75 ft. rein.-con. indoor-outdoor swim pool, natatorium, incl. excavating and backfill thermopane, sliding doors, Wells Park, $600,000; 49 x 165 rein.-con. masonry swim pool, Mann Park, $275,000. Ralph H. Burke, Inc., 20 N. Wacker Dr., Zone 6, engr. CD 9/3.

▲ **Ill., Chicago**—BA 12/22—Dpt. Purchases, City, City Hall, Zone 2, 200 ft. span, 56 ft. wide bascule bridge and viaduct over Chicago River at Dearborn St. $5,000,000. Steve Michuda, 320 N. Clark St., ch. bridge engr. CD 9/25/57.

BUILDINGS—BA

▲ **O., Cincinnati**—HOSPITAL—BA 12/17—Deaconess Hospital, Clifton and Straight Sts. (selected list of bidders), 63 bed hospital addn. $1,800,000. York & Sawyer, 101 Park Ave., New York, N. Y., archts.-engrs. CD 2/14/57.

▲† **Mich., Oscoda**—HOUSING—BA 1/27—Base Procurement Office, Wurtsmith Air Force Base, 618 units Capehart housing, Wurtsmith Air Force Base. $10,197,000. CD 9/29.

▲ **Wis., Milwaukee**—APARTMENT—Bids Asked—J. Rubin, 6129 N. Lake Dr., 14 story, 96 x 179 ft., 125 unit rein.-con., stone, brick apartment. $3,000,000. I. H. Levin, 5346 N. 27 St., engr. Greenberg & Finfer, 58 E. South Water St., Chicago, Ill., archts.

HEAVY CONSTRUCTION—LB & CA

▲† **Lane Constr. Co.**, 965 E. Main St., Meriden, Conn., CA $6,432,546 parallel runway facilities, Lockbourne Air Force Base, ENG-46-022-59-9, COLUMBUS, O. U. S. Eng., 237 Fourth Ave., Huntington, W. Va. CD 11/28, under LB.

ILLINOIS—Dpt. P. Wks. & Bldgs., Div. Hys., Centennial Bldg., Springfield,

Berry Constr. Co., 945 W. Pershing Rd., Decatur, Ill., CA $553,145, wid'n. 5.58 mi. U. S. 51 from Clinton northerly, DeWitt Co. Bids Oct. 31, awarded Nov. 20. CD 11/5, under LB.

BUILDINGS—LB & CA

▲ **Freeman Constr. Co.**, RD 3, Wooster, O., LB $1,223,000, general contract CHILDREN'S PSYCHIATRIC HOSPITAL, Sagamore Mills, AKRON, O. Ohio Dpt. P. Wks., State Dpts. Bldg., Columbus, O. Firestone & Motter, 1412 Cleveland Ave., Canton 3, O., archts.

Hagerman Constr. Co., Strauss Bldg., Fort Wayne, Ind., CA Est. $700,000, 1 story, 63,360 sq. ft. WAREHOUSE addn. 1,200 sq. ft. OFFICE addn., FORT WAYNE, IND., S. S. Kresge Co., Ferguson Rd., Fort Wayne Ind.

▲ **J. Puttman Hemck**, Skyforest, Calif., CA $1,000,000, Santa's Village, Hys. 25 and 72, DUNDEE, ILL. Cris Gustafson, Box 116, Dundee, Ill.

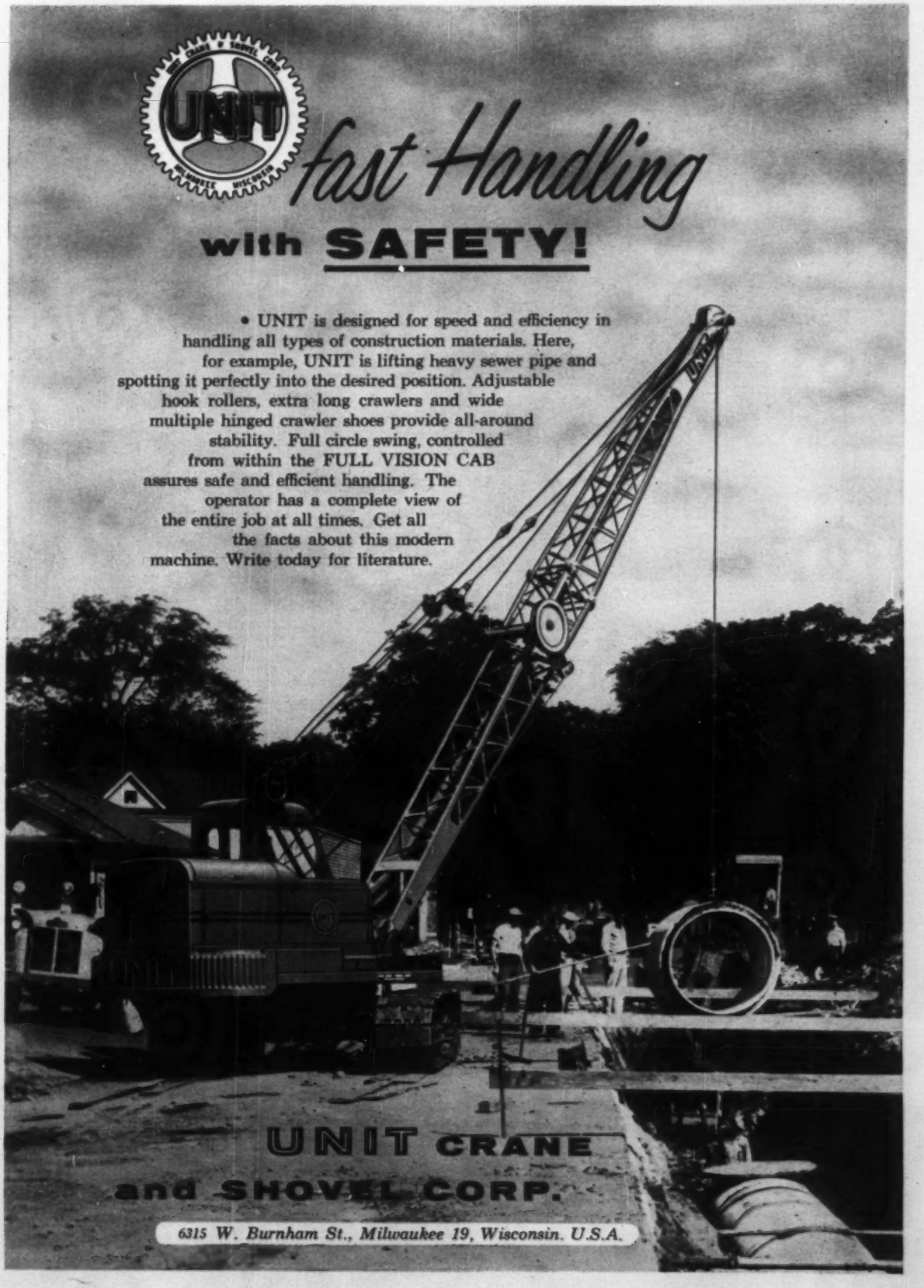
WEST OF MISSISSIPPI

BUILDINGS—BA

▲ **Colo., Denver**—HEALTH—BA 12/18—State Dpt. P. Health, Room 20, State Museum, 4 story, bsmnt. public health building. $1,000,000. Eugene D. Sternberg & Assocs., 1930 Sherman, archts. Ib Falk Jorgensen, 1240 W. Bayaud Ave., engr. CD 2/21/57.

† **Minn., Winona**—ARMY RESERVE CENTER—BA 12/18—U. S. Eng., 1217 Post Office and Custom House,

(Continued on page 96)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(Continued from Page 94)

St. Paul, Army Reserve Center, ENG-21-018-59-15B. CD 1/9.

† **Minn., Worthington**—ARMY RESERVE CENTER—BA 12/18—U. S. Eng., 1217 Post Office and Custom House, St. Paul, Army Reserve Center, ENG-21-018-59-15B. CD 1/9.

BUILDINGS—SLC

▲ **Colo., Lakewood** — SHOPPING CENTER — May Co. (Stores Realty Co.), Courthouse Square, Denver, soon lets contract Westland Shopping Center (first phase), May-DF Store, four 1 story bldgs., 151,400 sq. ft., 33,934, 33,034, 68,608 and 97,122 sq. ft., black topped paving area for 4,135 cars. $5,000,000. Raymond H. Ervin, 1500 Denver Club Bldg., Denver, archt. CD 12/25/57, under LB.

▲ **Mo., Kansas City**—OFFICE—Old Security Life Insurance Co., 1800 McGee, Kansas City, Mo., soon lets contract 4 story, 60,000 sq. ft., bsmnt., 115 x 115 ft., concrete block, brick, air-conditioned office, 34th and Broadway. $1,000,000. Kivett & Myers & McCallum, 1016 Baltimore, Kansas City, Mo., archts. Bob D. Campbell, 4117 Broadway, Kansas City, Mo., engr. CD 11/7, under Interstate Securities Co. as owner.

HEAVY CONSTRUCTION—LB & CA

▲ **W. K. Ingram Constr. Co.**, 116 W. Barton St., West Memphis, Ark., LB **$2,025,925**, est. $2,500,000, constr. major trunk line, and extension pipe line, LITTLE ROCK, ARK. Little Rock Sewer Comm., Robinson Auditorium, Little Rock, Ark. Bids Nov. 19. CD 11/10;
Wade Lahar Constr. Co., 9219 E. Admiral Place, Tulsa, Okla., LB **$546,572**, est. $500,000, small pipe line extending from Industrial Dist. to near old Hot Spring Hy. (Little Rock, Ark.).

▲† **Peter Kiewit & Sons**, Southeast Station, Wichita, Kan., LB **$1,129,159**, est. $1,175,000, operation apron and related utilities, Clinton-Sherman Air Force Base, CLINTON, OKLA. Officer in Charge of Constr., Eighth Naval Dist., Bldg. 16, U. S. Naval Station, New Orleans (Algiers), La. Bids Nov. 20. CD 11/3.

▲ **N. A. Saigh Co.**, Majestic Bldg., San Antonio, Tex. CA **$10,000,000**. design and construct natural gas pipe line from area Breckenridge to city limits of Austin, TEXAS. Mid-Texas Gas Co., 3109 Routh St., Dallas, Tex.

Heidenfels Bros., Box 1917, Corpus Christi, Tex. CA **$548,280**. Alameda St. asphalt paving, curbs and butters, CORPUS CHRISTI, TEX. City, City Hall, Corpus Christi, Tex. Bids Nov. 12. CD 11/26, under LB.

▲† **Lawless & Alford**, P. O. Box 600, 5117 E. 1st St., Austin, Tex. LB **$3,030,196**, est. $4,050,475. ICBM and IRBM Training Facilities, Sheppard Air Force Base, ENG-41-443-59-16, WICHITA FALLS, TEX. U. S. Eng., Box 1600, Fort Worth, Tex. Bids Nov. 25. CD 11/18.

BUILDINGS—LB & CA

W. A. Klinger, Inc., P. O. Box 1768, Sioux City, Iowa, LB **$742,343**, POWER PLANT SUPERSTRUCTURE, near here, incl. erection of structural steel, erection of turbine room crane and installation elevators, etc., Proj. IOWA 84, Hamilton, SPENCER, IOWA. Corn Belt Power Cooperative, Humboldt, Iowa. Bids Nov. 6. CD 11/27/57.

Bob Eldridge Constr. Co., Inc., 3206 Strong, Kansas City, Kan., LB **$791,939** (9 bidders) 1 and 2 story, 25,000 sq. ft. concrete, brick, ELEMENTARY SCHOOL and 2 story, 27,000 sq. ft. JUNIOR HIGH SCHOOL addn., KANSAS CITY, KAN. Bd. Educ., Kansas City, Kan. Bids Nov. 19. CD 11/11.

Alford Refrigerated Warehouses, Inc., 312 Cadiz St., Dallas, Tex. Owner Builds. $785,000. refrigerated WAREHOUSE, McBride Lane, CORPUS CHRISTI, TEX. CD 11/28.

▲† **Hal Hayes Texas, Inc.**, 13012 Saticoy St., North Hollywood, Calif. LB **$5,949,666**, Base Bid, **$6,483,166** with additives (6 bidders) constr. 410 units Capehart HOUSING, Fort Bliss, ENG-29-005-59-78, EL PASO, TEX. U. S. Eng., Box 1538, Albuquerque, N. M. Bids Nov. 26. CD 10/22.

W. S. Bellows Constr. Corp., 716 N. Everton St., Houston, Tex. CA Est. **$450,000**. furnishing, installing steel sheet piling on all 4 sides of bsmnt. of 37-42 story BANK-OFFICE, HOUSTON, TEX. First City National Bank Bldg., 921 Main St., Houston, Tex. Rob. J. Cummins, Bkrs. Mtg. Bldg., Houston, Tex., engr. CD 9/29.

Triangle Constr. Co., 8715-A Katy Rd., Houston, Tex. CA Est. **$500,000**. PLANT, HOUSTON, TEX. C-B Southern Inc., (subsidiary Cooper-Bessemer Corp.) 2705 Danville St., Houston, Tex. CD 8/14.

S. R. Duncan, Box 1347, Lubbock, Tex. CA **$931,198**. CLASSROOMS and OFFICE, LUBBOCK, TEX. Texas Technological College, Lubbock, Tex. Bids Nov. 13. CD 11/25, under LB.

E. J. Burke & Sons, 1100 Goliad Rd., San Antonio, Tex. Owner Builds. **$475,000**. APARTMENT UNITS, SE section SAN ANTONIO, TEX. CD 10/29.

State Hy. Dpt., Austin, Tex., rejected bids Oct. 9, constr. resident engineer's OFFICE and LABORATORY BLDG., State Proj. MC-7-0-7, STERLING CITY, TEX. New bids Dec. 4. CD 9/25.

▲ **John Murchison & Clint Murchison, Jr.**, Denver Club Bldg., Denver, Colo. Own Forces, **$2,625,000**, 5 story HOTEL and APARTMENT complex to be called Harvest House, includes swimming pool, BOULDER, COLO. Ralph D. Peterson & Arthur T. Auburn, 1701 Gilpin, Denver, Colo., archts.

FAR WEST

HEAVY CONSTRUCTION—BA

† **Washington**—BA 1/15—U. S. Eng., City-County Airport, Walla Walla, drilling 28,000 lin. ft. NX drain holes and 10,000 lin. ft. EX grout holes for curtain grouting from drainage galleries in Ice Harbor Dam, Walla Walla and Franklin Counties, CIVENG-45-164-59-33. CD 9/19.

HEAVY CONSTRUCTION—LB & CA

† **ALASKA**—Bureau P. Rds., Dpt. Commerce, Federal Bldg., Juneau, Bids opened Nov. 21.

Alaska—Rogers Constr. Co. & Babler Bros., Anchorage, Alaska, LB **$229,160** (5 bidders), grading, draining, paving 3.2 mi. Northern Lights Blvd. and Lake Otis Projects, DS-DUS-0536(2) and DS-DUS-0547-(3), Anchorage, CD 11/7; LB **$264,316** (3 bidders), grading, draining, bit. paving 2.7 mi. Sterling Hy., Proj. F-DF-021-1-(6), Homer. CD 11/13;

Alaska—Cheney Constr. Co., Central Bldg., Seattle, Wash., LB **$402,586** (5 bidders), grading, drainage, paving 1.7 mi. E. 5 Ave., Proj. DUS-0546(2), Anchorage, CD 11/6.

CALIFORNIA—State Div. Hys., 1120 N. St., Sacramento,

R. A. Westbrook, Inc., and Morrison Knudsen Co., Inc., 6431 Elvas Ave., Sacramento, Calif. CA **$596,757**, grading, surf. 3.7 mi. 4 lane freeway FAS Co. Rd. 885 (Alfred Harrell Hy.) NE of Bakersfield between 0.7 mi. east of Mt. Vernon Ave. and Hart Memorial Park and constr. 2 rein.-con. bridges to carry freeway over Oswell St. and Goodman Rd. Kern Co. Bids Nov. 5, awarded Nov. 26. CD 11/12, under LB.

Encino Constr. Co., 17071 Ventura Blvd., Encino, Calif. LB **$500,600**, est. $338,456 (4 bidders), activity bldg. and picnic area at City Terrace Park, 1126 N. Hazzard St., LOS ANGELES, CALIF. Bd. Supervs. Los Angeles Co., 501 Hall of Records, Los Angeles, Calif. Bids Nov. 19. CD 12/12/57.

† **L. F. Stillwell & Co.**, 8230 Beverly Blvd., Los Angeles 48, Calif. LB **$993,789** (15 bidders), component test bldgs. and utilities, Naval Air Missile Test Center, NBy-19493-58, POINT MUGU, CALIF. Eleventh Naval Dist., 1220 Pacific Hy., San Diego, Calif. Holmes & Narver, 828 S. Figueroa St., Los Angeles 17, Calif., archts. Bids Nov. 19. CD 10/17.

† **Wells-Benz, Inc.**, 1357 7th Ave., San Diego, Calif. LB **$497,282** (12 bidders), addns. to instrumentation bldg. at Naval Air Missile Test Center, POINT MUGU, CALIF. Eleventh Naval Dist., 1220 Pacific Hy., San Diego, Calif. Bids Nov. 20. CD 10/29.

BUILDINGS—LB & CA

▲ **Olson Constr.**, 1549 S. 2nd W., Salt Lake City, Utah, LB est **$1,000,000**. 1st phase MINUTE MAN FACILITIES, Thiokol Plant, west of BRIGHAM CITY, UTAH. Thiokol Chemical Plant, Utah Div., Box Elder Co., Brigham City, Utah. Bids Nov. 25. CD 11/26.

J. H. March, 10017 Bridgeport Way S.W., Tacoma, Wash., CA Est. **$500,000**, 26,000 sq. ft. FOOD STORE, AUBURN, WASH. Thriftway Stores, Inc., 3301 Norfolk St., Seattle, Wash. L. Swedberg & L. D. Anderson, 911½ Pacific Ave., Tacoma, Wash., archts.

Bell & Valdez Development Co., Bellevue, Wash., Day Labor, **$418,175**, 30 HOUSES, N.E. 3 St. and 164 N.E., BELLEVUE, WASH. CD 2/15/54.

▲ **Lease Co., Inc.**, 1501 N. 35 St., Seattle 3, Wash., LB **$1,104,226** (9 bidders), general contract steel frame auditorium, gymnasium, music and shop addns. to Lincoln High SCHOOL, SEATTLE, WASH. School Dist. 1, 915 4 Ave. N., Seattle, Wash. Bids Nov. 25. CD 10/29;
Navarre P & H Co., 3839 Stone Way, Seattle 3, Wash., LB **$528,243** (5 bidders), mechanical contract (Seattle, Wash.).

Olympus Homes, 15307 1 Ave. S., Seattle, Wash., Day Labor, **$432,400**, 39 HOUSES in 11600 block on S.E. 157 St., SEATTLE, WASH.

Juhr & Sons, 1339 S.E. Gideon St., Portland, Ore. CA **$545,000**, GYMNASIUM addn., Cleveland High School, PORTLAND, ORE. School Dist. No. 1, 620 N.E. Halsey St., Portland, Ore. Awarded Nov. 24. CD 11/19, under LB.

▲ **Luxury Homes**, 1557 W. Commonwealth, Fullerton, Calif. Owner Builds. **$2,655,720**, 133 stucco DWELLINGS, North La Palma between Knott and Western, BUENA PARK, CALIF. South Bay Engr., 1102 W. 17th St., Santa Ana, Calif., archt.

▲ **R. G. Trigg**, 8350 Los Coyotes Dr., Buena Park, Calif., CA **$1,138,960**. 50 stucco DWELLINGS, Bellhurst Tr., BUENA PARK, CALIF. Velturon Corp., 8350 Los Coyotes Dr., Buena Park, Calif. Buff, Straub & Hensman, 2614 W. 7th St., Los Angeles, Calif., archts.

Schneider Constr. Co., 800 E. Commonwealth, Fullerton, Calif. Owner Builds. **$875,470**. 81 DWELLINGS, Ponderosa, Laurel, Evergreen St. Tr. 2104, FULLERTON, CALIF.

Lawrence Constr. Co., 3020 V St., P. O. Box 5007, Sacramento, Calif. LB **$698,100** (7 bidders) 3 story steel frame BANK and OFFICE BLDG., 12th and J Sts., SACRAMENTO, CALIF. McClatchy Realty Co., c/o Secty., J St., Sacramento, Calif. CD 8/21.

Drogin Constr. Co., 6610 El Cajon Blvd., San Diego, Calif. CA **$542,493**, 56 frame, stucco DWELLINGS. Judson St., Judson Ct. and Alder St. SAN DIEGO, CALIF. Judson Park Co., 6610 El Cajon Blvd., San Diego, Calif.

T. A. Stanfield, 3491 Kurt St., San Diego, Calif. LB **$404,838** (5 bidders) Point Loma HIGH SCHOOL addn., SAN DIEGO, CALIF. San Diego Unif. School Dist., Park and El Cajon Blvds., San Diego, Calif. Bids Nov. 20. CD 11/9/56.

Maino Constr. Co., 2238 S. Broad St., San Luis Obispo, Calif. CA **$597,551**. General constr., HOME ECONOMICS BLDG., MATHEMATICS WING and COTTAGE at California State Polytechnic College, W.O. 4005GC-27, SAN LUIS OBISPO, CALIF. State Div. Architecture, 1100 S. Grand Ave., Los Angeles, Calif. Bids Nov. 19, awarded Nov. 25. CD 11/26, under LB.

Shepherd & Green Co., P. O. Box 1078, Stockton, Calif. CA **$824,000**, 30,000 sq. ft. type I, brick, rein.-con. BANK on ½ acre site Miner Ave., San Joaquin and Lindsay Sts., STOCKTON, CALIF. Bank of Stockton, San Joaquin and Main Sts., Stockton, Calif. Bids Nov. 13, awarded Nov. 19. CD 11/20, under LB.

▲ **Carvers Constr. Co.**, P.O. Box 484, Stockton, Calif. LB **$1,277,000**. general constr. RECEPTION GUIDANCE CENTER at Deuel Vocational Institution, consisting of two 3 story about 80,000 sq. ft. floor area cell bldgs., administration and vocational training bldg., W.O. 4004GC-1, TRACY, CALIF. State Div. Architecture, 1120 N. St., Sacramento, Calif. Bids Nov. 25. CD 10/24.

Forsberg & Gregory, 12½ W. State St., Redlands, Calif. LB **$832,348** (10 bidders) constr. frame, stucco, concrete block Apple Valley JUNIOR HIGH SCHOOL, Proj. No. 1, Apple Valley, VICTORVILLE, CALIF. Victor Valley Union High School Dist., 16248 Desert Knoll Dr., Victorville, Calif. Bids Nov. 25. CD 11/17.

CANADA

HEAVY CONSTRUCTION—BA

Ont., Toronto—OFFICE AND WAREHOUSE—BA 12/16—Toronto Harbour Comn., 60 Harbour St., superstructure, incl. brick, block 2 story office, 1 story Warehouse No. 17 overall dimensions abt. 200 x 475 ft. and 119 ft. loading platform, $400,000. CD 7/17/55.

▲ **Que., Dorval**—AIRPORT IMPRVS.—BA 12/19—Trans-Canada Airlines, 1080 University St., Montreal, hangars and workshops at overhaul and maintenance base, Montreal Airport. Over $1,000,000. Plans deposit $500. Ross, Fish, Duchesne & Barrett, 4115 Sherbrooke St. W., Montreal, archts. CD 1/6/58.

BUILDINGS—BA

Ont., Ottawa—SCHOOL—BA 12/16—Collegiate Institute Bd., 180 Bay St., Rideau High School addn. $790,000. Plans deposit $75 Hazelgrove, Lithwick, & Lambert, 575 Laurier Ave. W., archts. CD 7/11.

▲ **Ont., Fort William**—SCHOOL—BA 12/17—Bd. Educ., Fort William, 2 story, 280 x 280 ft., 3 wings, H-shaped, concrete, structural steel, masonry high school, $1,000,000. Mickelson, Fraser & Haywood, 16 Ave. at Memorial Ave., Port Arthur, archts.-engrs. CD 9/3.

HEAVY CONSTRUCTION—LB & CA

▲ **Pacific Bridge of B. C. Ltd. & General Constr. Co., Ltd.**, Granville, Island, Vancouver, B. C. LB **$2,213,835** (14 bidders) cement section Seymour Falls dam for water supply storage, Seymour Falls, NORTH VANCOUVER, B. C. Bids Nov. 7. CD 10/8;
Dominion Bridge Co., Ltd., 2700 Boundary Rd. Burnaby, B. C., LB **$59,780** (2 bidders) supply 78 in. steel pipe and appurtenances at Seymour Falls dam site (North Vancouver, B. C.).

Trynor Constr. Co. Ltd., 68 Argyle St., Halifax, N. S., LB **$648,228** (7 bidders) taxiway, 1,815 ft. exten. to Runway 17-35 and related work, Torbay Airport, TORBAY, NEWFOUNDLAND. Dpt. Transport, Hunter Bldg., Ottawa, Ont. Bids Nov. 20. CD 11/10.

ONTARIO—Dpt. Hys., Parliament Bldgs., Toronto,
Hacquoil's Constr. Co. Ltd., 1408 Brown St., Fort William, Ont., CA **$862,070** grading, culverts, granular base and hot mix paving 17.64 mi. Trans Canada Hy. 17, Jackfish Lake to Terrance Bay (57-280) Terrance Bay. Awarded Nov. 21. CD 11/26, under LB.

ONTARIO—Dpt. Hys., Parliament Bldgs., Toronto, Bids opened 11/27,

H. J. McFarland Constr. Co., Ltd., Talbot St., Picton, Ont., LB **$467,975** (15 bidders) grading 5.09 mi. Hy. 401 (58-278) Port Hope. CD 10/28.

PRINCE EDWARD ISLAND—Dpt. Hys. & P. Wks., Charlottetown,
Foundation Maritime Ltd., 135 Lower Water St., Halifax, N. S. CA **$556,557** (19 bidders) Hillsborough Bridge substructure, incl. 2 piers and 2 abutments to carry 886 ft. steel bridge, near Charlottetown. CD 7/30/56.

Desourdy Constr. Ltee, 170 Dorchester St. E., Montreal, Que., CA **$600,026** (9 bidders) approx. 44,000 lin. ft. 4 to 12 in. water mains, approx. 15,000 ft. 12- to 54-in. sewer pipe, JACQUES CARTIER, QUE. City of Jacques Cartier, City Hall, Jacques Cartier, Que. CD 10/22, under LB.

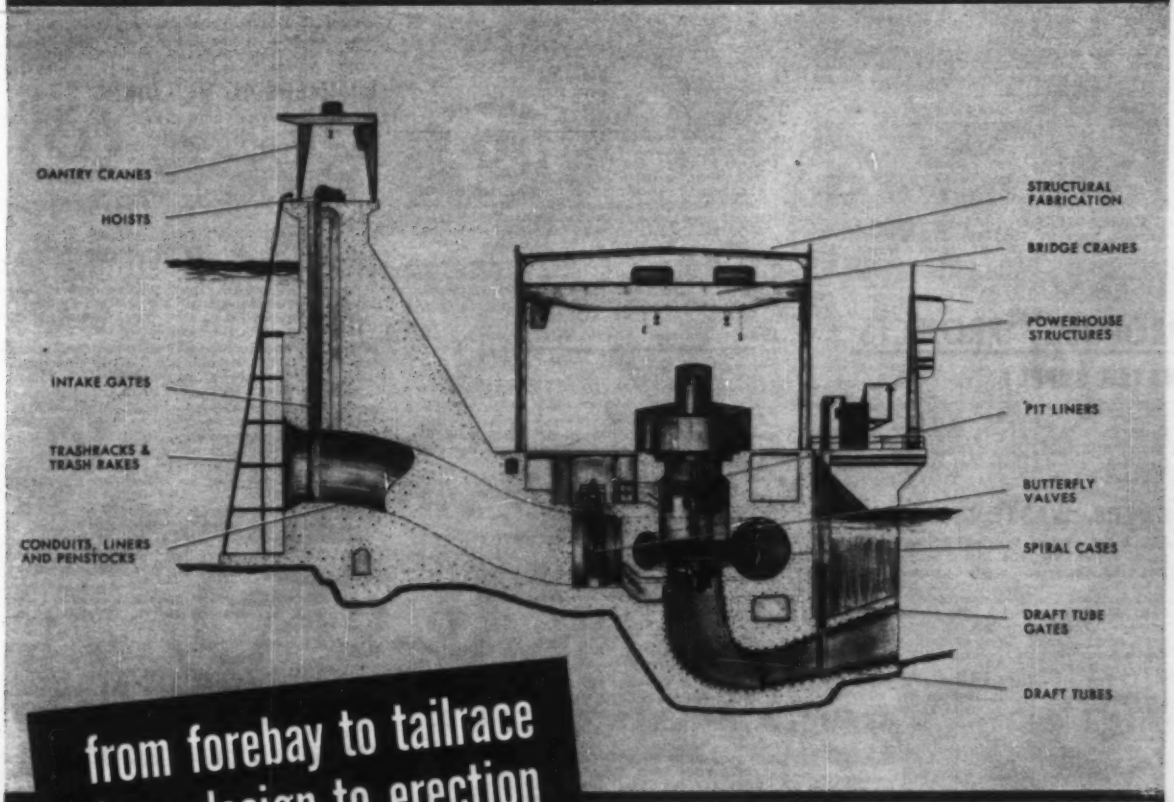
▲ **City of Montreal**, City Hall, Montreal, Que. rejected bids Oct. 22, 2 and 3 story, bsmnt. recreation Centre, MONTREAL, QUE. David & David, 7020 Cote des Neiges Rd., Montreal, Que., archts. Brouillet & Carmel, 3600 Barclay Ave., Montreal, Que., engrs. LB **$1,879,640**. Will re-advertise. CD 10/31, under LB.

BUILDINGS—LB & CA

Parsons Constr. Co. Ltd., Lower Main St., Moncton, N. B. CA **$728,000** (9 bidders) three men's RESIDENCES at University, SACKVILLE, N. B. Bd. Regents, Mount Allison University, Sackville, N. B. C. A. Fowler & Co., 28 South St., Halifax, N. S., archts. CD 10/17.

(Continued on Page 98)

HYDRO EQUIPMENT



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Plants—*Yuba Manufacturing Division, Benicia, Calif.; Judson Pacific-Murphy Corp., Emeryville, Calif.;* Sales Office—*520 Balfour Bldg., San Francisco.*

YUBA CONSOLIDATED INDUSTRIES, INC.

YUBA

(Continued from page 96)

▲ **Con-Eng Contractors Ltd.**, 267 Dundas St., London, Ont. CA $1,051,300 combined all RANKS QUARTERS, combined all RANKS MESS and CAFETERIA BUILDING, Canadian Army Camp, COBOURG, ONT. Defence Constr. (1951) Ltd., 56 Lyon St., Ottawa, Ont. Bids Oct. 28. CD 11/7, under LB.

▲ **Dell Constr. Co. Ltd.**, 2461 Bloor St. W., Toronto, Ont., LB $2,179,810 (17 bidders) 200 row HOUSING and SEMI-DETACHER UNITS with services, Canadian Army Camp, PETAWAWA, ONT. Central Mortgage & Housing Corp., 650 Lawrence Ave. W., Toronto, Ont. Bids Oct. 30. CD 10/15.

▲ **G. S. Shipp & Son Ltd.**, 23 Applewood Village, Port Credit, Ont. Owner Builds $3,000,000, 335 HOUSES community and industrial development, Dundas Hy. and Dixie Rd., TORONTO, ONT.

J. H. Dupius Ltee., 3333 Viau Ave., Montreal, Que. CA $440,000, 2 story, bsmnt., brick, rein.-con. school, Blvd. Fred Mir, MONTREAL, QUE. Montreal Catholic School Comn., 3737 Sherbrooke St. E., Montreal, Que. Marc Cinq-Mars. 1980 Sherbrooke St. W., Montreal, Que., archt. Labrecque, Labrecque & Gagnon, 10 St. James St. W., Montreal, Que., engrs. Awarded Nov. 21.

J. L. E. Price & Co. Ltd., 4664 St. Catherine St. W., Montreal, Que., CA $550,000, 3 story, 35x316 ft. rein.-con. PRINTING PLANT extens., Royden Rd., MONTREAL, QUE. Standard Publishing Co. Ltd., 231 St. James St. W., Montreal, Que. Bids Nov. 21, awarded Nov. 25. CD 11/14.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Calif., Santa Cruz**—City, City Hall, voted bonds Nov. 4 constr. Newell Creek Dam located near Ben Lomond in the Santa Cruz Mountains. $5,500,000. CD 9/4.

▲ **N. C., High Point**—City, City Hall, water filtration plant addn. and raw water pumping station. $1,500,000. Wm. F. Freeman, Inc., 116½ Commerce St., consult. engr.

SEWERS, WASTE DISPOSAL

Conn., Bethel—Town, Town Hall, sewerage system, Bethel Center, $900,000. Henry Souther Engineering Corp., 11 Laurel St., Hartford, consult. engrs. CD 8/15.

▲ **Mo., St. Louis County**—Metropolitan St. Louis Sewer Dist., 901 Washington Ave., St. Louis, Zone 1, defeated $4,100,000 bonds Nov. 20, 12½ mi. sanitary trunk sewers, Gravois Creek Sanitary Sub-District in Gravois Creek Watershed, southern part of St. Louis County. CD 10/31.

▲ **N. J., Somerville**—Twp. of Bridgewater, Green Knoll Municipal Bldg., Somerville, sewerage sys., incl. mains, Bradley Gardens section of twp. $2,000,000. To be started in 1959. Lee T. Purcell Eng. Co., 36 DeGrasse St., Paterson, consult. engrs. CD 8/5/57.

▲ **N. Y., Hamburg**—Town, Town Hall, sewage treatment plant. $1,500,000.

▲ **N. Y., Wheatfield**—Town, Town Hall, sewers and treatment plant. $2,500,000. Krehbiel & Krehbiel, 2000 Sheridan Rd., Buffalo, N. Y., consult engrs. CD 10/16.

▲ **Vt., Hartford**—Town, Town Hall, sewage treatment plant, storm water drainage. $2,600,000.

STREETS AND ROADS

▲ **Ill., Granite City**—City, City Hall, street imprvs., incl. 114 streets $3,200,000. David J. Johnson, 129 E. 3 St., East St. Louis, consult. engr. CD 2/8/54.

▲ **O., Kettering**—City, City Hall, Imprv. streets, (5 year program) $1,481,888. CD 11/13/57.

▲ **Pa., Phila.**—Dpt. Procurement, City Hall Annex, Cheltenham Ave. imprvs. $2,920,000.

grading, paving at Pattison Ave. East-Food Distribution Center, $900,000.

Schuylkill Expressway City Ave. to Arch St., incl. connections with 30th St. Plaza, $1,000,000.

Schuylkill Expressway, Roosevelt Blvd. exten. 9th St. to Schuylkill Expressway, $8,000,000.

Wissahickon Ave. imprvs., Hunting Park Ave. to Roberts Ave. $450,000. CD 1/31/45.

EARTHWORK, WATERWAYS

▲ **Texas**—International Boundary Comn., 1st National Bank Bldg., El Paso, Diablo Dam, Rio Grande River, 12 mi. North of Del Rio. $65,000,000. Constr. 1959. CD 2/26/57.

AIRPORTS

▲† **N. Y., Niagara Falls**—HOUSING—Base Procurement Office, Niagara Falls Air Force Base, Niagara Falls, plans by Highland & Highland, archts.-engrs., 522 Franklin St., Buffalo, 90 unit family housing, Niagara Falls Air Force Base. $1,500,000.

PUBLIC BUILDINGS

▲ **Calif., Berkeley**—CYCLOTRON—Bd. Regents, University of California, 2288 Telegraph Ave., 88 in. cyclotron at Ernest O. Lawrence Radiation Laboratory. $4,000,000. AEC has supplied funds.

▲† **Calif., Salinas**—POST OFFICE—General Services Admin., Room 6119, 18th and F Sts. N.W., Wash. 25, D. C., plans by Jerome Kasanan, 7 Winham St., 32,600 sq. ft. U. S. Post Office exten. $1,250,000.

▲ **Colo., Colorado Springs**—LIBRARY—City, City Hall, $1,500,000 bond election Apr. 7, library bldg.

▲ **Colo., Colorado Springs**—HOSPITAL—Planning Div. State of Colorado, State Office Bldg., Denver, plans by Gordon Sweet, 222 E. Bijou, Colorado Springs. Earl C. Morris, 122 E. 19 Ave., Denver and Walter DeMordaunt, 738 Thatcher Bldg., Pueblo, 7 story addn. to Colorado State Hospital. $9,000,000.

▲ **Conn., Hartford** — STATE OFFICE — State P. Wks. Dpt., 165 Capitol Ave., plans by Walter Crabtree, Jr., 196 Fern St., West Hartford, state office bldg. $8,000,000. Anderson, Nichols & Co., 150 Causeway St., Boston, Mass., engrs. CD 11/6.

▲ **Ill., Barrington**—SCHOOL—Barrington Consolidated High School, 616 Main St., plans by Perkins & Will, 309 W. Jackson Blvd., Chicago, Zone 6, 2 story high school addn. $1,200,000. Bids in Spring.

▲ **Ill., Belleville** — HOUSING — St. Clair Co. Housing Auth., 900 N. 24 St., constr. 100 unit public housing, incl. 100 homes, east central area of village, Brooklyn (Lovejoy P.O.). $3,000,000. CD 7/21.

▲ **Ky., Lexington**—HOSPITAL, etc.—Commonwealth of Ky., Div. Purchases, Frankfort, plans by Meriwether, Maryе & Assoc., 248 E. Short St., 8 story, bsmnt., brick, stone, concrete hospital, clinic and ambulant wing, nurses' residence, incl. paving. $1,200,000. Ellerbe & Co., 1st National Bank Bldg., St. Paul, Minn., consult. engrs. Proctor Ingles, 915 S. Limestone St., mechanical engr. Bids in March. CD 6/8/55.

▲ **Md., Annapolis**—SCHOOLS—Bd. Educ. Anne Arundel Co., Annapolis, plans by Harder & Dressell, Glen Burnie, 2 story, brick, concrete, steel, block high school, Linthicum, $2,750,000; Quarterfield Rd. School near Glen Burnie. Over $500,000.

▲ **Md., Baltimore**—SCHOOLS—City, Bureau Bldg. Constr., 410 Municipal Bldg., Baltimore, Zone 2, plans by Meyer & Ayers, Federal Land Bank Bldg., Zone 18, 1, 2 and 3 story, brick, concrete steel Calverton Junior High School. $3,500,000-$4,000,000; brick, concrete, steel, block Orem Elementary School, $1,030,000. CD 11/11.

▲ **Minn., Owatonna**—SCHOOLS—Bd. Educ., voted $1,600,000 bonds Nov. 18, elementary school, high school and elementary school addns. CD 10/14.

Minn., Sauk Rapids—SCHOOL—Bd. Educ., voted $900,000 bonds Nov. 18, high school. $750,000. (Correction—location of project). CD 11/26, under Minn., Sauk Center.

▲ **Miss., Jackson**—NURSES DORMITORY—State Bldg. Comn., State Office Bldg., Jackson, plans by R. W. Naef, 844 N. State, Jackson, Miss., 18,000 sq. ft. concrete, frame, brick veneer, masonry, concrete block nurses dormitory at University Medical Center. $1,672,000. CD 8/31/56.

Miss., Jackson—OFFICE—State Bldg. Comn., Woolfolk State Office Bldg., plans by Biggs, Weir & Chandler, 336 Meadowbrook Rd., 2 story, 45,000 sq. ft. office bldg. for Employment Security Comn., West Capitol St. $800,000.

▲ **Miss., Natchez**—SCHOOL—Adams Co. Consolidated School Dist., Natchez, plans by Overstreet, Ware & Ware, 414 S. State St., Jackson, steel frame school. $1,200,000.

▲ **Miss., Oxford**—DORMITORY, etc.—State Bldg. Comn., State Office Bldg., Jackson, plans by R. W. Naef, 844 N. State, Jackson, dormitory; plans by Thomas Johnston, Starkville, student apartments at University of Mississippi. $1,672,000.

▲ **Mont., Deer Lodge**—STATE PRISON—State Bd. Examiners, Helena, plans by Knight & Van Teylingen, Medical Arts Bldg., Great Falls, 2 prisoner housing units, $2,014,875 and $530,755; treatment center and warehouse bldg. $1,727,275; food service and shops bldg. $1,360,525; recreation bldg. $567,513 administration bldg. $472,475. Will ask legislature for funds January 1959. CD 9/14/45.

▲ **N. J., Eatontown**—SCHOOL—Monmouth Regional High School Dist., referendum for bonds and approval of project Jan. 6, 1959, high school, New Shrewsbury, $1,675,000. Wiedersum Assocs., 85 W. Hawthorne Ave., Valley Stream, N. Y., archts. CD 12/6/57.

▲ **N. J., Freehold**—SCHOOL—Freehold Regional High School Dist., second high school. $2,250,000.

▲ **N. J., Trenton**—SCHOOL—Bd. Educ. Twp. of Hamilton, plans by Kramer, Hirsch & Carchidi, 115 W. State St., 2 elementary schools, Hamilton Twp. $1,500,000-$2,000,000. CD 6/5/57.

▲† **N. J., Wrightstown**—HOUSING—Air Force Military Air Transport, Scott Air Force Base, Ill., plans by Pope & Kruse, 1116 West St., Wilmington, Del., 145-unit Capehart housing, McGuire Air Force Base, $24,000,000. Bids in Dec. CD 10/6.

▲ **N. Y., Buffalo**—HOME ECONOMICS, etc.—State Dpt. P. Wks., State Office Bldg., Albany, plans by J. Gordon Carr, 80 W. 40th St., New York, Home Economics Bldg. and site imprvs. at State Teachers College, $1,250,000. Wilcox & Erickson, 11 E. 44th St., New York, consult. engrs. CD 12/15/55.

▲† **N. Y., New York**—OFFICE—General Services Admin., 18 and F Sts. N.W., Wash. 25, D. C., office for United States Customs Court, Foley Sq., Lafayette, Worth and Duane Sts. $68,062,000. To go ahead after 1960. CD 2/26.

▲ **N. Y., Pendleton**—SCHOOL—Starpoint Central School Dist., Pendleton, bond election Dec. 16, school addn., Mapleton Rd. $1,245,000.

▲ **O., Akron**—SAFETY—City, City Hall, safety bldg., $3,000,000.

▲ **O., Parma**—HIGH SCHOOL—Bd. Educ., 5401 W. 54 St., Zone 29, plans by Fulton, DelaMotte, Larson & Nassau, 6014 Euclid Ave., Cleveland, Zone 3, high school. $4,500,000. CD 11/11.

▲ **S. C., Charleston**—HOSPITAL—Charleston County Council, The Center, Charleston, hospital. $2,500,000.

▲ **Tenn., La Follette**—HOUSING—La Follette Housing Admin., housing program. $2,000,000.

▲ **Tex., Fort Worth**—POLICE STATION, etc.—City, City Hall, defeated bonds Nov. 4, constr. police station and jail $2,750,000. (Correction—status). CD 11/21.

▲ **Wyo., Cheyenne**—SCHOOL—Bd. Educ., School Dist. 1, 2118 Central Ave., plans by Robert W. Postin, 2838 Kelley Dr., 19-room addn. to Goins elementary school. $1,000,000. CD 10/29.

Wyo., Lander—SCHOOL—Fremont Co. High School Dist., voted bonds Nov. 15, brick high school. $800,000. Tressler & McCall, Cody, archts. CD 10/23.

COMMERCIAL BUILDINGS

▲ **Colo., Denver**—SHOPPING CENTER—Jack Davis, c/o John E. Fuller, 331 Colo. National Bank Bldg., plans by Nat S. Sachter, 111 Adams, shopping center, 48 and Pecos Sts., $1,000,000.

▲ **Colo., Denver**—HOSPITAL—St. Mary's Hospital, 7th and Patterson Rd., Grand Junction, plans by John K. Monroe, Security Life Bldg., 50 bed hospital addn. $1,000,000.

▲ **Colo., Denver**—APARTMENTS—University of Denver, Campus, plans by University Management Corp., University of Denver, two 12 story, 200 unit apartments, underground parking, swimming pool, 10-12 story office, two 1½ story buildings and 2 story, group of research buildings. $10,000,000. Sheldon F. Reese, University Management Corp., staff engr. CD 12/5/49.

▲ **Colo., Westminster**—HOMES, etc.—Perl-Mack Constr. Co., 405 Vallejo, Denver, 1,600 to 1,800 brick homes, $20,000,000; shopping center addn. to Perl Mack Manor Shopping Center. $500,000.

▲ **Ill., Bloomington**—OFFICE—Illinois Agriculture Assn., 43 E. Ohio St., Chicago, 10 story office. $5,000,000.

Ill., Chicago—DORMITORY—Mundelein College, 6363 N. Sheridan Rd., plans by Naess & Murphy, 80 E. Jackson Blvd., Zone 4, 7 story dormitory for 250 students, Kenmore Ave. and Sheridan Rd. $900,000. Bids early 1959.

▲ **Ill., Des Plaines**—HOTEL—Owner, c/o Howard Johnson (lessee) 160 Auburn St., Cleveland, O. plans by Carl Koch & Assocs., 55 Brattle St., Cambridge, Mass. 100 suite hotel, incl. restaurant, swimming pool, vicinity Higgins Rd., N & NW Expressway. $1,500,000.

▲ **Ill., Springfield**—LODGE—Springfield Masonic Lodge, 420 S. 6 St., masonic lodge. $1,000,000. Constr. Spring 1959.

▲ **Ind., Evansville**—SCHOOL OF NURSING—St. Mary's Hospital, 173 First Ave., 4 story School of Nursing. $1,000,000. Work to start about Feb. 1, 1959.

▲ **Ind., Indianapolis**—MOTEL—Fall Creek Hotel Corp., c/o Chapman-Streets Realty Co., 455 N. Emerson St., 85 unit motel with 500-seat restaurant, 2 swimming pools, on 6½-acre site bounded by State Rte. 37, E. 45 St. and Temple Ave. $1,500,000.

▲ **La., New Orleans**—OFFICE—Allen Towers, c/o Shaw, Metz & Dolio, archts.-engrs., 208 S. LaSalle, Chicago, Ill., 25 story, 357,000 sq. ft. office. $8,000,000.

▲ **La., Shreveport** — SHOPPING CENTER — Freestate Park, Inc., 265 N. Freestate Blvd., plans by Neild-Somdal-Smitherman & Assocs., 960 Jordan St., Shreveport, La. 2nd unit, 1 story, 120,000 sq. ft. brick, steel shopping center. $1,500,000.

▲ **Mass., Boston** — LIBRARY, etc. — Simmons College, The Fenway, Boston, plans by Campbell & Aldrich, 38 Newbury St., Boston, Mass., Library and School of Publication, Fenway and Ave. Louis Pasteur. $1,500,000. Constr. 1959. CD 5/29/56.

▲ **Mich., Detroit**—OFFICE—Michigan Consolidated Gas Co., 415 Clifford, Detroit, plans by Smith, Hinchman & Grylls Assocs., Inc., 3107 W. Grand Blvd., Detroit 2, Mich., and Yamasaki, Leinweber & Assocs., 1025 E. Maple Rd., Birmingham, Mich., 20 story, 400,000 sq. ft. office, incl. underground garage. $20,000,000. To go ahead 1963.

▲ **Minn., Edina (P.O. Minneapolis)**—HOTEL, etc.—Motor Court Systems, Inc., 10400 Vincent Ave. S., Bloomington, (Minneapolis P.O.), 5 or 10 split-level motel bldgs., 1 story restaurant and swimming pool, West 66th St. and Frances Ave. South. $1,250,000. Constr. July 1959.

▲ **Miss., Ocean Springs**—HOUSES—Bailey Real Estate & Insurance Co., Washington Ave., Gulfport, housing development consisting 140 frame, brick veneer houses, south of Old Hy. No. 90 on Bechtel Rd. $1,950,000.

▲ **Mo., St. Louis**—APARTMENT—Julius Garagnani et al, 6433 Chippewa St., Zone 9, 15 story apartment, incl. 400 dwelling units, shopping center, automobile parking area, 11½ acre tract, Gravois and Hampton Aves. Over $1,000,000.

▲ **N. J., Asbury Park**—NIGHT CLUB AND MOTEL—Owner, c/o Paul Peluso, 901 Sunset Ave., night club and motel, Asbury Ave. $3,000,000.

▲ **N. J., Elizabeth**—APARTMENT—William P. Hahn, 63-45 Saunders St., Rego Park, plans by Isadore Naftali, 312 High St., Newark, 5 story apartments, West Jersey St. $1,000,000. CD 11/18.

▲ **N. J., Paterson**—HOSPITAL—Barnett Memorial Hospital, 680 Broadway, plans by Fordyce & Hamby Asso., 70 West 40 St., New York, N. Y., 100-bed hospital addn. $2,500,000. CD 5/8/57.

▲ **N. J., Princeton**—TAVERN HOTEL—Princeton Municipal Improvements, Inc., 27 Palmer Square West, plans

by William B. Tabler, 401 7 Ave., New York, N. Y., Nassau Tavern Hotel addns., renovations, Palmer Square. $1,000,000. CD 11/3.

▲ **N. J., Trenton**—APARTMENT—James A. Murray, 2685 Princeton Pike, 144 unit garden type apartment, Palmer Lane off Sullivan Way, Ewing Twp. $1,000,000.

▲ **N. J., Trenton**—APARTMENT—James A. Murray, 2685 Princeton Pike, plans by Morgan Davis, 383 Washington Ave., Belleville, 144 unit garden type apartment, Palmer Lane, off Sullivan Way, Ewing Twp. $1,000,000. CD 11/26.

▲ **N. J., Wrightstown**—SHOPPING CENTER—North Run Enterprises, Fort Dix Rd., 12-store shopping center on 26-acre site, Wrightstown-Cookstown Rd. adjacent to McGuire Air Force Base. $2,000,000.

N. Y., Buffalo—HOUSES—B.T.F. Bldg. Corp. 722 Eggert Rd., 32 single family houses, Bennett Village. $800,000. Krehbiel & Krehbiel, 200 Sheridan Rd. consult. engrs.

▲ **N. Y., East Aurora**—SHOPPING PLAZA—Aurora Village Shopping Center, Inc., c/o Harry Hoffman & Sons, 983 Jefferson, Buffalo, plans by Nichols & Pearlman, 4548 Main St., Synder, 30-unit shopping plaza, Gray St. and Rte. 20-A. $2,000,000. Constr. in Spring.

▲ **N. Y., North Tonawanda**—MOTEL, etc.—Powerline Plaza Inc., 2176 Delaware, Buffalo, plans by Backus, Crane & Love, 232 Delaware Ave., Buffalo, 70-room motel, offices and supermarket, incl. stores. $2,000,000. CD 11/11.

▲ **O., Dayton**—SHOPPING CENTER—Davis Oil Co., 2506 N. Western St., shopping center, on 25 acres site, southeast corner Dayton-Xenia Pike and Fairfield-Bellbrook Rd. $1,000,000.

▲ **O., Kettering**—HOMES—Victory Constr. Co., 5735 N. Dixie Hy., Dayton, 100 homes on 45 acres on Stroop Rd. $2,000,000.

▲ **O., Sylvania**—HOMES—Nopper Constr. Co., 4045 Tallmadge Rd., Toledo, 332 homes on 135 acres known as Claremont Colony at southeast corner Brint and McCords Rds., $2,000,000; shopping center on 21 acre site, corner Brint and McCord Rds., $350,000. Porter W. McDonnell, Colton Bldg., Toledo, consult. engrs.

▲ **O., Toledo**—APARTMENTS—J. A. E. Enterprises Co. & Trail Way Heights, c/o Louis Romanoff, Edison Bldg., two 60 unit apartments, Anthony Wayne Trail, between Sherwood Ave. and Marengo St. Over $1,000,000.

▲ **O., Toledo**—STORE—Sears Roebuck & Co., S. State and Van Buren Sts., Chicago, Ill., plans by Bellman, Gillett & Richards, 1600 Madison Ave., archts. and Dunlap & Esgar, 333 N. Michigan St., Chicago, Ill., archts.-engrs., 2 story, 252,000 sq. ft. Department Store, north side of Central Ave., near Secor Rd., $2,000,000. CD 2/18.

▲ **O., Trotwood**—SHOPPING CENTER—Arthur Beerman & Assocs., 4217 N. Main St., Dayton, shopping center on 33 acre site at southwest corner Free Pike and Olive Rd. $1,500,000. CD 12/23/57, under Jack Davis as owner.

▲ **R. I., Westerly**—HOSPITAL—The Westerly Hospital Corp., Westerly, plans by Shepley, Bulfinch, Richardson & Abbott, 1 Court St., Boston, Mass., hospital addn. $1,000,000. Constr. 1959. CD 1/2/45.

▲ **Tex., Dallas**—OFFICE—Mayflower Investment Co., Fidelity Union Life Bldg., plans by Hedrick & Stanley, 904 Fort Worth Ave., 30 story, 600,000 sq. ft. office, Pacific and Akard Sts. $8,000,000.

▲ **Tex., Midland**—OFFICE—Oil Center Bldg., Inc., c/o Chamber of Commerce, plans by Wilson, Morris & Crain & Anderson, 3330 Graustark St., Houston, 12 story office (to have foundation for 10 addnl. stories) Main and Illinois St. $3,500,000.

▲ **Tex., Pasadena**—SHOPPING CENTER—O. Y. Ong, Heights State Bank Bldg., Houston, shopping center, Red Bluff Rd. $1,000,000.

▲ **Utah, Murray**—HOSPITAL—Latter Day Saint's Church, 47 E. South Temple St., Salt Lake City, 120 bed hospital, 23 acre site, 5770 3rd East. $1,500,000. Constr. June 1959.

▲ **Wash., Spokane**—HOME—Dominican Sisters, Kettle Falls, home for chronically ill. $1,300,000. Work may start after first of year.

▲ **Wis., Madison**—SHOPPING CENTER—Mead-Jacob-Viconsi Co., c/o L. Isaksen, 122 W. Washington St., shopping center. $1,500,000.

▲ **N. S., Glace Bay**—HOSPITAL—St. Josephs Hospital, Main St., plans by Govan, Ferguson, Lindsay Kaminker, Langley & Kennleyside, 10 Price St., Toronto, Ont., hospital addn. $1,375,000.

▲ **Ont., London**—APARTMENTS—Trylon Investments Ltd., S. Kohn, pres., 95 Base Line Rd., plans by W. Shulman, 1173 Bay St., Toronto, two six story, bsmnt., 52 suite, steel, brick, block apartments, Grand Ave. and Ridout Sts. $1,000,000. Bruce Hastings, 199 Queen's Ave., consult. engr.

▲ **Ont., Windsor**—SCIENCE—Essex College, Assumption University, 398 Huron Line, plans by Pennington & Carter, Morris Block, science bldg. $3,500,000.

Que., Montreal—SHOPPING CENTER—Cartierville Shopping Centre, c/o Greenspoon, Freedlander & Dunne, archts., 4151 Sherbrooke St. W., 2 story, 334 x 681 ft. shopping centre, Lachapelle Blvd., Cartierville, Montreal suburb, $800,000.

▲ **Que., Montreal**—APARTMENT—A. Cohen Co. Ltd., 20 Springrove Crescent, plans by Charles Grenier, 3600 Barclay Ave., 10 story, 180 suite, brick, rein.-con. apartment block, North Crescent Ave. $1,000,000. B. A. Eskenazi, 6819 Decarie Blvd., consult. engr.

INDUSTRIAL BUILDINGS

▲ **Ala., Tuskegee**—PLANT—Sterling Pulp & Paper Co., 1200 Forest St., Eau Clare, Wis., paper products plant on Tallapossa River. $3,000,000.

▲ **Minn., Red Wing**—GENERATING PLANT—Northern States Power Co., 15 South Fifth St., Minneapolis, Minn. 1,000,000 KW "Prairie Island" steam generating plant. $170,000,000. (10 year program).

▲ **N. J., North Bergen**—WAREHOUSE—Owens-Illinois Glass Co., O-I Bldg., Toledo, O., 200,000 sq. ft. warehouse, 47-acre site. $1,000,000. To be built within a year.

▲ **N. J., Riverside**—PLASTICS PLANT—Shell Chemicap Corp., 50 S. 50 St., New York, N. Y., plastics plant, $1,000,000. Bids soon. All States Design & Development Co., 25 N. Warren St., Trenton, engr.

▲ **N. Y., Rye**—PLANT, etc.—United Aircraft Corp., Norden Div., 400 Main St., East Hartford, Conn., 2 story, 350,000 sq. ft. brick, glass plant, laboratory and office, King St. $6,000,000 (Site Changed). CD 9/5, under Conn., Greenwich.

UNCLASSIFIED

▲ **Arkansas**—ELECTRIC TRANSMISSION LINES—Arkansas Power & Light Co., 4th and Louisiana Sts., Little Rock, 90 mi., 230,000 volt-electric transmission line from power plant at Helena to Pine Bluff, Phillips Co., $4,182,000; 3.8 mi. 115,000-volt electric line from power plant at Helena, Phillips Co., $266,000; 6½ mi. 115,000-volt electric transmission lines vicinity of Hope, Hempstead Co., $285,000. Ebasco Services, Inc., 2 Rector St., New York, N. Y., consult. engr.

▲ **California**—GAS LINE—Southern Counties Gas Co. & Southern California Gas Co., 810 S. Flower St., Los Angeles, 200 mi. 34 in. gas line from near Nevada border to Placentia, San Bernardino, Riverside and Orange Counties. $44,000,000. Applied to Calif. Pub. Utilities Comn. for permission to construct.

▲ **Missouri**—RAILROAD LINE—Missouri Pacific Railroad, W. H. Hobbs, ch. engr., 1218 Olive St., St. Louis, Zone 3, (second phase), 11 mi. grading, track laying and bridges at Pea Ridge line from Cadet, Mo., on main line to iron ore mines of St. Joseph Lead Co. and Bethlehem Steel Co. near Sullivan, Mo. $1,398,000.

▲ **N. J., Port Newark**—CARGO DISTRIBUTION BLDGS.—Port of New York Auth., 111 8 Ave., New York 11, N. Y., four 1 story cargo distribution bldgs., south of Calcutta St., south side of channel. $4,500,000.

Get Short Hauls for Your Truck Mixers Every Time

ERIE'S NEW TPA-TPC PORTABLE BATCH PLANT ASSURES YOU MORE BATCHES PER DAY WITH FEWER TRUCK MIXERS

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PERFORMANCE SPEAKS

...and here's the H&B performance

6 H&B plants produced 43% of mix (for 52.24 miles) while 13 other makes of plants produced 57% (for 69.68 miles)

The Massachusetts Turnpike has been called the most ambitious single road surfacing project in New England history. Despite many delays to prime contractors, a high degree of cooperation between the engineers, the contractors and the Massachusetts Turnpike Authority made possible completion of the job approximately on schedule.

Ten topnotch contractors shared this 122 mile job, which required 1,800,000 tons of broken stone and 1,022,000 tons of bituminous concrete. Of the total blacktop production, the six Hetherington & Berner Type "T" plants which participated in the job produced 437,200 tons of mix, or enough to pave 52.24 miles of the turnpike. The thirteen other plants which participated on the job produced 584,800 tons, or enough to pave 69.68 miles.

Shown at the right are two of the six H & B plants that had a part in the job. The performance record of these six plants on this job was not at all unusual for H & B asphalt plants. Throughout the United States, Canada, Mexico, Central and South America, Europe, Africa and the Middle East, H & B asphalt plants have been doing the same thing for well over a half century —cutting the costs and speeding the jobs on paving projects of all kinds and sizes—large and small. Below are shown other types of H & B asphalt equipment which have equally enviable performance records to their credit.

For complete information on any of these plants see your nearest H & B distributor or write direct.

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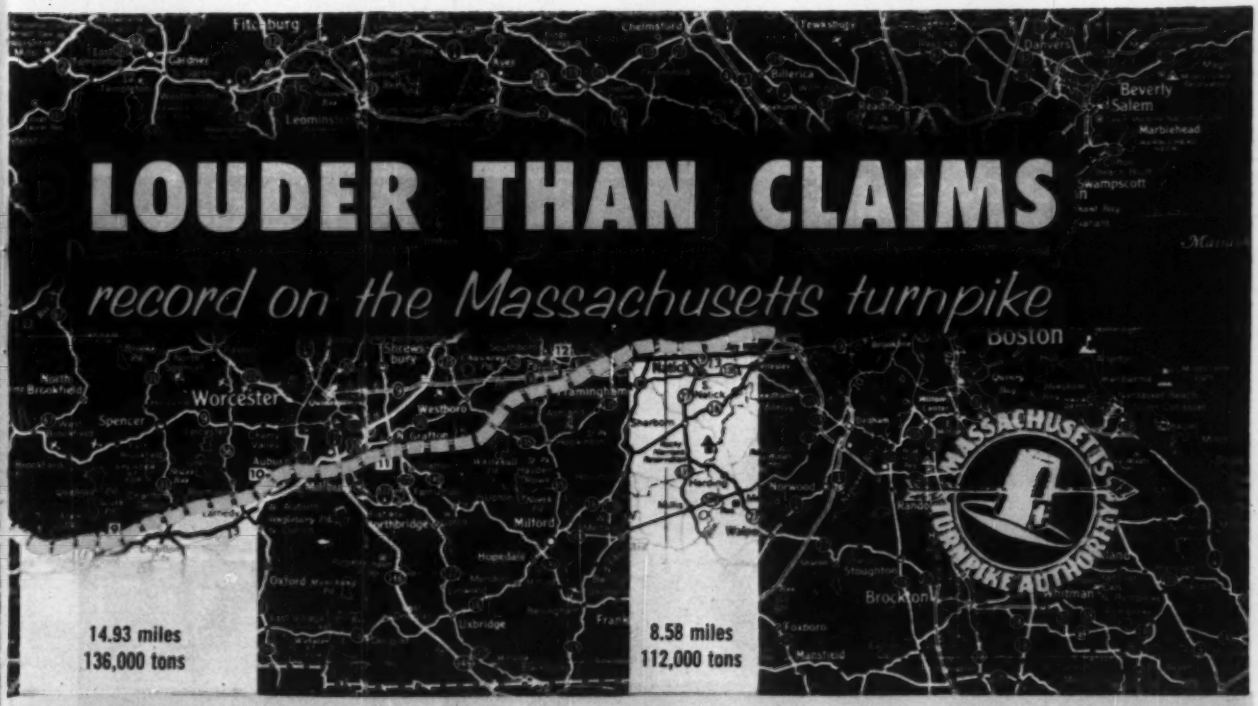
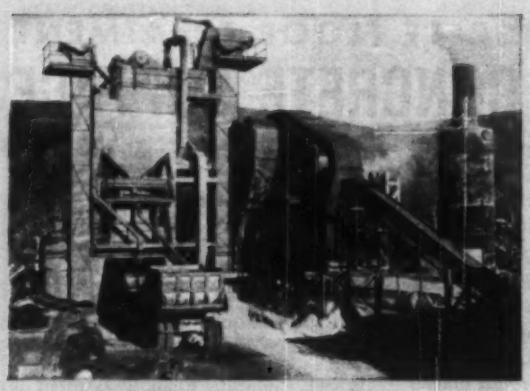
At right: The H&B Moto-Paver is a combination mixer-paver, in one self contained, self-propelled unit—does the complete mixing and paving job in one continuous operation. Uses sand, gravel, stone or slag aggregates and most types of emulsions, cut-backs, road oils and tars with equal efficiency. Mixing capacity on resurfacing work 100 to 120 tons per hour.

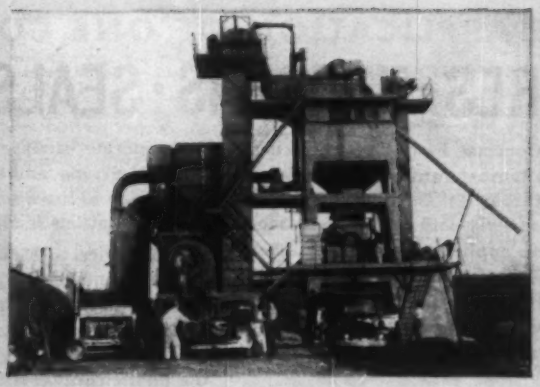
LOUDER THAN CLAIMS

record on the Massachusetts turnpike



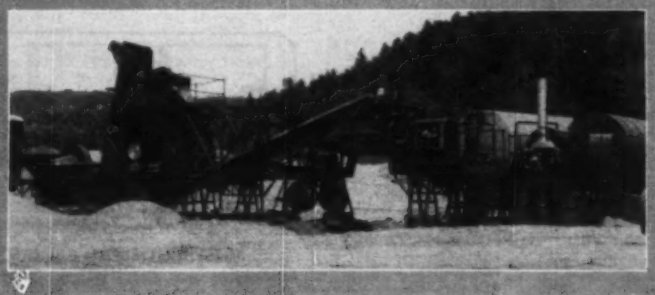


Above is the 3 ton Hetherington & Berner asphalt plant used by B. Perini & Sons to supply the 96,000 tons of bituminous concrete required for their Western section of the Massachusetts Turnpike.



Above is the Hetherington & Berner T-60 plant of Nello L. Teer Co., which furnished the bituminous concrete for their own part of the job, also for the two Clark-Farrell jobs.

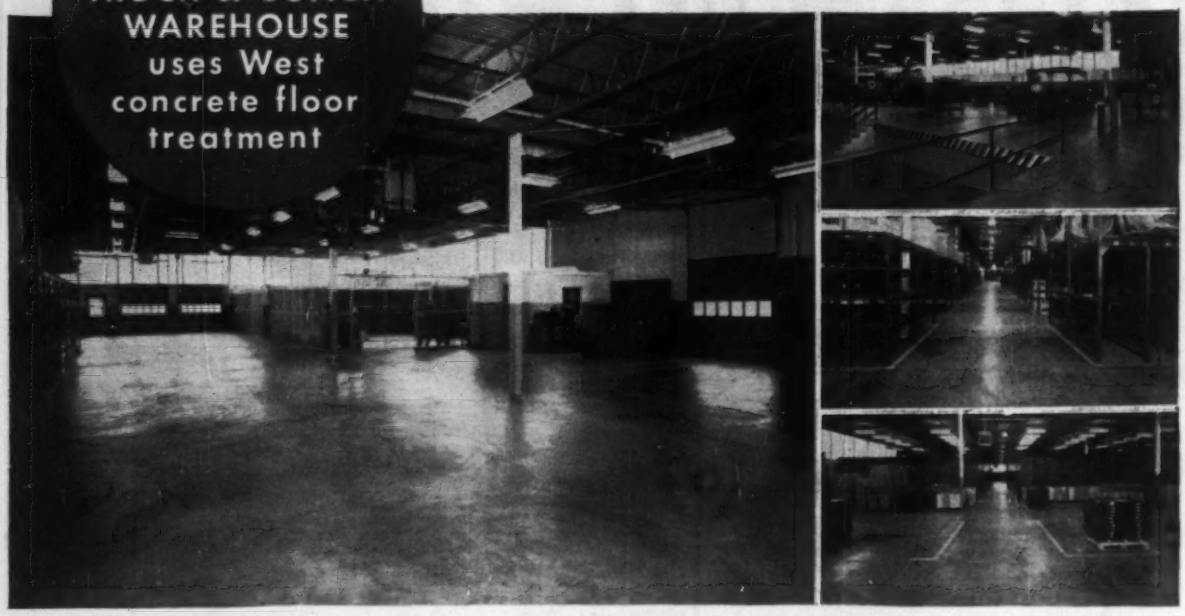
At right: H&B Mobile (completely wheel mounted) batch type plants, require no crane for erection or dismantling. All piping and wiring permanently installed, with quick disconnects. Dismantling, moving, and erection on another site is a matter of a few hours instead of days. Capacity ranges: Mobile 20—40 to 60 tons; Mobile 40—120 to 140 tons; Mobile 60—160 to 225 tons per hour.



Still another GMC TRUCK & COACH WAREHOUSE uses West concrete floor treatment

As in several previous GMC warehouses this "one application treatment" is exhibiting exceptionally fine durability to heavy duty service. Plans are to specify WEST Concrete Floor Treatment for all new warehouses — and apply it under the supervision of the WEST Representative.

At GMC Truck and Coach Division parts warehouses construction is under the direction of Mr. John J. Wygzoski, National Field Warehouse Manager, General Motors Truck and Coach Division, General Motors Corporation, Pontiac, Mich.



ONE APPLICATION OF ONE CONCRETE FLOOR TREATMENT

CURES · HARDENS · SEALS CONCRETE SURFACE

WEST Concrete Floor Treatment is a proven time-saving, labor-saving product that 1) Cures 2) Hardens 3) Seals newly-laid concrete surfaces with *one* application. It is a rubber based formulation with a quick drying solvent. Formerly as many as three separate products and applications were needed to obtain the same results.

WEST Concrete Floor Treatment can be applied immediately after horizontal surfaces have been troweled or as soon as the concrete can be walked on. Usually in *one* to *eight* hours. It is applied quickly and easily with a lamb's wool applicator. All the labor formerly required for cleaning the concrete surface after delayed concrete drying, and between the use of as many as three separate products and applications is eliminated.

WEST Concrete Floor Treatment is applied immediately after troweling. Its fast drying permits subsequent building operations to be speeded. It also dustproofs as it seals. This speeds the final cleaning. All foreign matter is easily flushed off the surface.

WEST Concrete Floor Treatment enables newly-laid, wet concrete to retain 95% of its moisture. This permits it to cure and harden while sealing the surface against acids, oils, greases and other foreign matter. This incongruous aspect of holding back most of the moisture while permitting some moisture to escape slowly is the key to this product's amazing success.

WEST Concrete Floor Treatment is colorless and will not alter the color of the poured mix. It goes on evenly and spreads quickly without streaks. One gallon covers from 300-350 sq. ft.

WEST Concrete Floor Treatment is fully attested, fully proven across the United States and Canada. Full details and samples are available immediately from any of WEST's 400 specially trained representatives from coast to coast. Write, phone or wire your nearest WEST office.

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VANCOUVER, B. C.
WINNIPEG, MAN.

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
December 16 Massachusetts

▲ **Massachusetts**—BA 1/15—Commonwealth of Mass., Constr. Div., Metropolitan Dist. Comn., 20 Somerset St., Boston, Contr. 284 (1st section) water tunnel in Wachusett-Marlboro area, incl. sinking and lining 3 tunnel shafts from 222 to 385 ft. deep, 14 ft. finished diam., excav. and lining 8 mi. tunnel, Clinton, Marlboro, Boylston, Berlin and Northboro. $9,000,000. Plans deposit $25. CD 12/3.

HEAVY CONSTRUCTION—LB & CA

▲† **Five Boro Constr. Corp.**, 2 Lafayette St., New York, N. Y., CA **$2,967,000**, est. $3,000,000, Wherry Housing, Loring Air Force Base, Inv. 17-600-59, LIMESTONE, ME. Base Procurement Office, Loring Air Force Base, Limestone, Me. Bids Sept. 16. CD 9/22, under LB.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
Daniel O'Connell's Sons, Inc., 480 Hampden St., Holyoke, Mass., CA **$3,594,367**, Interstate Hy. Rte. 91. I-IN-91-1(2), Longmeadow-Springfield. Bids Nov. 13. CD 11/18, under LB.

BUILDINGS—LB & CA

Paul G. Voncik Assocs., 281 So. Main St., New Canaan, Conn., Owner Builds, **$690,000**, 23 HOUSES, Walnut Hill Rd., Plumbtrees Dist., BETHEL, CONN.

▲ **S. Leger Starr**, North Rd., Hazardville, Conn. Owner Builds. **$2,531,250**, 225 HOUSES, "Southwood Acres", ENFIELD, CONN.

M. J. Megin, Inc., 51 Elm St., Naugatuck, Conn., LB **$714,417**, David Russell Lyman MEMORIAL BLDG. and altering existing bldg., WALLINGFORD, CONN. Gaylord Farm Assocs., Sanitorium Cook Hill, Wallingford, Conn. Bids Dec. 2. CD 11/7.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
December 16 New Jersey
STREETS AND ROADS
December 19 Pennsylvania December 23 New Jersey
December 30, New York

▲ **N. Y., Idlewild**—RUNWAY V APPROACH LIGHT PIER—BA 1/6—Port of New York Auth., 111 Eighth Ave., New York Zone 11, Contr. NYA-920.009, approach light pier for Runway V at New York International Airport. Plans deposit $30. CD 9/20.

▲ **N. Y., Rochester**—BA 1/6—City Purchasing Agent, Rm. 36, City Hall, No. 20 South Fitzhugh St., Zone 14, combined or separate bids, Stage 2, Contr. 2A, general constr. and equip., Contr. 2B stack, Contr. 2C piping and plumbing, Contr. 2D electrical constr., Contr. 2E heating and ventilating for Main Sewage Treatment Plant addns. Plans deposit $50. Nussbaumer, Clarke & Velzy, 505 5th Ave., New York, consult. engrs. CD 3/20/56.

BUILDINGS—BA

▲ **N. Y., Bath**—HOSPITAL—BA 12/16—Ira Davenport Memorial Hospital Inc., Bd. Trustees, East Steuben St., Bath, Proj. NYS-171, hospital. $1,000,000. Plans deposit $100. Extended date. James H. Ritchie & Assoc., 135 Clarendon St., Boston, Mass., archts. CD 11/18.

▲ **Pa., West Chester**—HEATING PLANT, etc.—BA 12/31—General State Auth., 18th and Herr Sts., Harrisburg, heating plant and utility expansion for West Chester State Teacher's College. $1,000,000. Plans deposit $10. Sanders & Thomas Assocs., Security Trust Bldg., Chester, engrs.-archts. CD 4/25/57.

HEAVY CONSTRUCTION—LB & CA

▲ **Brookfield Constr. Co.**, 521 5th Ave., New York, N. Y., LB **$6,708,683** (7 bidders), combined bid. Contr. GWB-190.000, constr. Section No. 7 of approach roadway sys. in New York City for lower level expansion of George Washington Bridge; Contr. GWB-190.011, constr. Section 8 of approach roadway sys. in New York City for lower level expansion of George Washington Bridge, NEW YORK and NEW JERSEY. Port of New York Auth., 111 Eighth Ave., New York 11, N. Y. Bids Dec. 2. CD 10/29.

▲ **NEW JERSEY**—State Hy. Dpt., Kenneth D. Rice, secy., 1035 Parkway Ave., Trenton,
N. J.—**Selte Engineering Co.**, E. 36 Midland Ave., Paramus, N. J., CA **$818,177**, grading, paving, bridge 1.827 mi. Rte. 208, Sect. 2, from 1,000 ft. west of Helena Ave. to Colonial Rd., Bergen Co.;
N. J.—**Thomas Nicol Co.**, Hamilton Rd., Farmingdale, N. J., CA **$641,486**, dualization 2.05 mi. U. S. Rte. 202, Sect. 4, from 700 ft. east of Central R. R. of New Jersey to Somerville traffic circle, Somerset Co. Bids Nov. 18, awarded Dec. 2. CD 11/20, under LB.

▲ **NEW JERSEY**—State Hy. Dpt., Kenneth D. Rice, secy., 1035 Parkway Ave., Trenton,
N. J.—**M. J. Stavola, Inc.**, Chapel Hill Rd., Red Bank, N. J., CA **$774,822**, grading, paving, bridge 1.134 mi. Rte. 18, Sect. 4, from Old Bridge traffic circle to Pine St., Madison Twp., Middlesex Co.;
N. J.—**Peter W. Kero, Inc.**, 217 Washington Ave., Carlstadt, N. J., CA **$548,538**, wid'n., realignment 2.433 mi. Rte. 23, Sect. 15A, from Steenykill Lake to Clover Rd., Montague Twp., Sussex Co. Bids Nov. 25, awarded Dec. 2. CD 11/28, under LB.

▲ **NEW JERSEY**—State Hy. Dpt., Kenneth D. Rice, secy., 1035 Parkway Ave., Trenton,
Yonkers Contg. Co., 969 Midland Ave., Yonkers, N. Y., CA **$6,379,960**, grading, bridges, incidental paving 4.849 mi. Rte. 78, Sect. 2E, from Central R. R. of New Jersey to Mulhockaway Creek, Hunterdon Co. Bids Nov. 13, awarded Dec. 2. CD 11/18, under LB.

▲ **NEW JERSEY and PENNSYLVANIA**—State Hy. Dpt., 1035 Parkway Ave., Trenton, N. J.,
Conduit & Foundation Corp., 158 N. 20 St., Phila., Pa., CA **$1,675,895**, constr. superstructure of Scudders Falls Bridge over Delaware River between Lower Makefield Twp., Bucks Co., Pa., and Ewing Twp. in Mercer Co., N. J. Bids Oct. 28, awarded Dec. 2, CD 10/30, under LB.

▲ **DELAWARE**—State Hy. Dpt., Rm. 202, Hy. Admin. Bldg., Dover, Bids opened 12/3,
James Julian, Inc., 405 DuPont Rd., Elsmere, Del., LB **$1,390,947** (7 bidders), relocation and constr. new approaches to Delaware Memorial Bridge, West Farnhurst, New Castle Co. CD 11/21.

BUILDINGS—LB & CA

▲ **Siegfried Constr. Co., Inc.**, 6 N. Pearl St., Buffalo, N. Y., LB **$3,499,700** (8 bidders), general constr. eight 1 story ACADEMIC BLDGS. (Phase 2) for Erie County Technical Institute, BUFFALO, N. Y. Bd. Supervs. Erie Co., County Hall, Buffalo, N. Y. Bids Dec. 2. CD 11/21;
H. C. Mapes, Inc., 16 S. Niagara, Lockport, N. Y., LB **$496,632** (10 bidders), heating and ventilating; LB **$208,845** (10 bidders) plumbing for Erie County Technical Institute (Buffalo, N. Y.);
Dobkin Electrical Co., 6 Stetson, Buffalo, N. Y., LB **$631,900** (10 bidders), electrical work for Erie County Technical Institute (Buffalo, N. Y.).

▲ **Braverman Constr. Co.**, 16 Court, Brooklyn, N. Y., LB **$692,380** (21 bidders), general constr. POWER HOUSE (Bldg. 11) for Bronx State Hospital for Dpt. Mental Hygiene, NEW YORK, N. Y. State Dpt. P. Wks., State Office Bldg., Albany, N. Y., Bids Nov. 26, CD 11/10;
Raisler Corp., 129 Amsterdam Ave., New York, N. Y., LB **$758,000** (12 bidders), heating for Power House (Bldg. 11) (New York, N. Y.);
Plymouth Elec. Constr. Co., 60 E. 42, New York, N. Y., LB **$296,700** (16 bidders), electrical work for Power House (Bldg. 11) (New York, N. Y.).

▲† **Sovereign Constr. Co.**, 1325 17th St., Fort Lee, N. J., CA **$3,288,000** constr. (except elevator plant) 12 story BUILDING for United States Mission to United Nations Building, United Nations Plaza and E. Forty-Fifth St., NEW YORK, N. Y. General Services Admin., Business Service Center, 250 Hudson St., New York 13, N. Y. Bids Oct. 31. CD 11/5, under LB.

▲ **Fidelity Engineering Co.**, 149 Hackensack Ave., Hackensack, N. J., CA **$1,000,000**, 6 story OFFICE BLDG., N. W. corner of Main St., HACKENSACK, N. J. Henry W. Holman, 17 Maple Ave., Hackensack, N. J. Keyes, Lethbridge, Condon, 1300 Connecticut Ave. N. W., Wash., D. C., archts.

▲ **Radice Constr. Co.**, 10 Franklin Ave., White Plains, N. Y., Own Forces. **$1,000,000**, 14 story, APARTMENT, Mount Prospect Ave., NEWARK, N. J. George Sole, 347 E. 52 St., New York, N. Y., archt.

▲ **Hovan Brothers**, Oakland Ave., Oakland, N. J., Own Forces, **$1,200,000**, 40 HOUSES, Hillside Ave., OAKLAND, N. J.

▲ **Wesco Constr. Co.**, State Hy. 23, Mountain View, N. J., Own Forces, **$1,300,000**, 9 story, 114-family APARTMENT, Broadway and 33 St., PATERSON, N. J., Sidney Schenker, 130 E. 39 St., Paterson, N. J., archt.

▲ **Public Constr. Co.**, Jos. Rosenblatt, pres., 920 12 St., Fair Lawn, N. J., Own Forces, **$2,500,000**, 97 HOUSES, Preakness Ave., PREAKNESS, N. J., Leonard G. Feinen, 320 Lincoln Ave., Hasbrouck Heights, N. J., archt.

▲ **P-Y Constr. Co.**, P. O. Box 547, Princeton, N. J., Own Forces, **$1,750,000**, 50 HOUSES, Riverside Dr., PRINCETON, N. J. Stanley Shaftel, 166-21 90 Ave., Jamaica, N. Y., archt.

▲ **Alron Constr. Co.**, Schyler Ave., Waldwick, N. J., Own Forces, **$1,500,000**, 57 HOUSES, Yvonne St., WALDWICK, N. J.

▲ **Harold E. Irwin, Inc.**, 6915 State Rd., Phila., Pa. CA **$1,000,000**. 68 unit HOTEL and RESTAURANT, PHILA., PA. Joseph Simon, 1616 Walnut St., Phila., Pa. Sabatino & Fishman, 116 S. 19th St., Phila., Pa., archts., David R. Wittes, 1913 Walnut St., Phila., Pa., engr.

▲ **Turner Constr. Co.**, 1500 Walnut St., Phila., Pa. CA **$2,500,000**, SERVICE BLDG. PHILA., PA. Strawbridge & Clothier, 8th and Market Sts., Phila., Pa. Abbot, Merkt & Co., 10 E. 40th St., New York, N. Y., engrs. CD 5/15/52.

▲ **McCloskey & Co.**, 1620 W. Thompson St., Phila., Pa. LB **$4,732,000**, est. $6,467,815, 570 unit low rent APARTMENTS, Hawthorne Square, 13th and Fitzwater Sts., PHILA., PA. Phila. Housing Auth., 42 S. 15th St., Phila., Pa. Bids Nov. 26. CD 10/29.

▲† **Hyman Constr. Co.**, 33 E. St. S. W., Wash., D. C., CA **$3,139,876** constr. ACADEMIC BLDG. (I.C.A.F.) at Fort Lesley J. McNair, WASH., D. C. U. S. Eng., 1st and Douglas St. N. W., Wash. 25, D. C. R. L. Senseman, 7705 Georgia Ave. N. W., Wash., D. C., archt. Bids Nov. 18. CD 11/26, under LB.

Robert Harris, 2021 M St. N. W., Wash., D. C. Owner Builds, **$616,000**, 88 unit APARTMENT BLDGS., 4930 G St. S. E., WASH., D. C. Earl Von Reichenback, 1219 Good Hope Rd. S., Wash., D. C., archt.

▲ **Atlantis Engineering & Constr. Co.**, c/o Harry Rubenstein, 9 and Market Sts., Wilmington, Del., Own Forces. $10,000,000, RESIDENTIAL DEVELOPMENT, incl. 800 homes, (166 1st unit) NEW CASTLE, DEL.

▲ **Rupert Constr. Co.**, 3400 Lancaster Ave., Wilmington, Del., LB **$2,474,301** (4 bidders), constr. SENIOR HIGH SCHOOL, in Rose Hill Minquadale School Dist., Garfield Park, NEW CASTLE, DEL. Rosehill Minquadale School Dist., New Castle, Del. Bids Dec. 3. CD 11/19.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
December 19 Kentucky
STREETS AND ROADS
December 17 Virginia December 19 Kentucky

† **La., Lake Charles**—READINESS CREW BLDG.—BA 1/13—U. S. Eng., P.O. Box 1229, Galveston, Tex., 22,781 sq. ft. readiness crew bldg., Chennault Air Force Base, ENG-41-243-59-27. $600,000-$800,000. CD 12/1.

BUILDINGS—BA

▲ **Ga., Atlanta**—JUVENILE COURT, etc.—BA 12/17—Fulton Co. Bd. Comrs., Roads & Revenues, Courthouse, juvenile court and detention home. $1,850,000. Extended date. John J. Harte Co., 284 Techwood Dr. N.W., archt. and engr. CD 11/20.

Miss., Batesville — FACTORY, etc. — BA 12/17 — Bd. Supervs. Panola Co., 1 story, steel frame, concrete block, aluminum siding factory and office bldg. for Big "M" Metal Products Co., Inc., lessee. $900,000. Plans deposit $50. Brewer & Skewes, 150 Delta Ave., Clarksdale, Miss., archts. Rivers & Neuer, Ouachita National Bank Bldg., Monroe, La., engrs.

▲† **Ky., Fort Knox**—HOUSING—BA 12/23—Central Purchasing Branch, Fort Knox, rehabilitation 1,500 units Wherry Housing, AII-15-014-59-29. CD 7/22.

HEAVY CONSTRUCTION—LB & CA

▲ **Somerville Constr. Co.**, 6648 Fulton Rd., Ada, Mich. CA Est. over **$1,000,000**, Sections 2, 3, 5, 6 natural gas transmission lines, NORTH CAROLINA. North Carolina Gas Corp., 325 Grace Putman Bldg., Fayetteville, N. C. Bids Nov. 8;
C. N. Flagg & Co., 48 Elm St., Meriden, Conn. CA Est. over **$500,000**, Section 4, natural gas transmission lines (North Carolina).

▲ **NORTH CAROLINA**—State Hy. Comn., Raleigh,
Ballenger Paving Co., Paris Station, Greenville, S. C. CA **$1,543,683**, fine grading, CABC, 9 in. concrete paving and shoulder constr. 8.4 mi. Hy. Proj. 8.16253, Catawba Co. Bids Nov. 19, awarded 11/28. CD 11/24, under LB.

▲ **SOUTH CAROLINA**—State Hy. Dpt., Hotel Jefferson, Columbia,
Blythe Bros. Co., P.O. Box 989, 2911 Hutchason Ave., Charlotte, N. C. CA **$1,766,312**, Alt. 2. stabilizer material-stone screenings for macadam base course and b. conc. surf. 10.25 mi. Int. Rte 26 from US Rte 76 near Irmo to Rd. 48, S. C. Dockets Nos. 32.399.1 and 40.473.1. F.A. Proj. I-26-2 (17) I 304-2 (17) Lexington and Richaland Counties. Bid Nov. 18. CD 11/25, under LB.

▲ **SOUTH CAROLINA**—State Hy. Dpt., Hotel Columbia, Columbia,
Slaussen-Lawrence Constr. Co., 1394 Gwinnett St., P. O. Box 840, Augusta, Ga. CA **$1,075,673**, grade, etc. 9 mi. Int. Rte. 26, S.C. Dockets Nos. 9.301 and 32.411, F.A. Proj. I-26-3 (4) Calhoun and Lexington Counties. CD 10/21, under LB.

▲† **Five Boro Constr. Corp.**, 2 Lafayette, New York, N. Y. LB **$6,243,000**, polaris missile assembly facility, Naval Ammunition Depot, NBy 19955, CHARLESTON, S. C. Dist. P. Wks. Office, Bldg. 13, U. S. Naval Base, Charleston, S. C. Bids Dec. 2. CD 10/20.

▲† **Blythe Bros.**, Box 989, Charlotte, N. C. and **Morrison-Knudsen Co.**, 411 W. 5 St., Los Angeles, Calif., LB **$2,644,881** alert aprons overruns, Hunter Air Force Base, No. 09-133-59-13, SAVANNAH, GA. U. S. Eng., 200 E. St. Julian St., Savannah, Ga. Bids Nov. 28. CD 11/3;
Whaley & Minter, Box 514, Brunswick, Ga., LB **$504,989**, readiness crew bldg., No. 09-122-59-13 (Savannah, Ga.).

FLORIDA—State Rd. Dpt., Tallahassee,
Duval Engineering & Constr. Co., Box 1588 Jacksonville, Fla., CA **$870,901** six lane 9 in. c. conc. pavement 8½ in. limerock base with Type I b. conc. surf. course and binder course 6½ in. limerock base with Type 1-A surf. tr. drainage structures, 3 concrete slab deck grade separation bridges (one street, one railroad and 1 combination railroad and street) 433.86 ft. with prestressed beams on

concrete piers, etc. FAI Proj. No. I-95-5 (11) 345 Job No. 2020-3483 SR 9, Duval Co. Bids Sept. 23, awarded Nov. 25, CD 9/30, under LB.

† **L & A Contg. Co.**, Box 829, Hattiesburg, Miss., CA $929,070, imprv. Canal 40 Section 1 (Indian Prairie Canal) and constr. Structures 72 and 75 Central and Southern Florida Flood Control Proj., CIVENG-0B-123-59-17, FLORIDA. U. S. Eng., Box 4970, Jacksonville, Fla. (Correction—status). Bids Oct. 21, awarded Nov. 25. CD 11/20, under LB.

▲† **The Auchter Co.**, 1021 Oak, Jacksonville, Fla., CA $1,500,000 (6 bidders) (to be leased by the Government) constr. air route traffice control center, HILLIARD, FLA. Civil Aeronautics Admin., General Services Admin. Specifications, GSA, 57 St. N. E. Atlanta, Ga. Bids Oct. 17

W. L. Hailey & Co., 314 42 Ave. N., Nashville, Tenn., CA $539,530, Proj. MES 15-9, outfall sewers, JACKSONVILLE, FLA. City, City Hall, Jacksonville, Fla. Grand total $997,592. Bids Nov. 12, awarded Nov. 26. CD 11/19;
Harbert Constr. Corp., P. O. Box 1369, Birmingham, Ala., CA $301,206, Proj. MES 15-13, lateral sewers, CA $156,856 trunk sewer (Jacksonville, Fla.).

LOUISIANA—State Hy. Dpt., Rm. 307, Hy. Office Bldg., Baton Rouge,

T. L. James & Co., Inc., Box 531, Ruston, La., CA $708,005, wid'n., surf. existing bit. pavement 8.011 mi. Varnado-Mississippi State Line Hy., Rte. LA 21, FAP 244(3) SP 30-04-16, Washington Parish. Bids Oct. 22, awarded Nov. 7. CD 10/29, under LB.

† **Mike Hooks, Inc.**, Box 135, Lake Charles, La., CA $517,260, hydraulic lift for increase in base width, Cathoula-Fish Island levee to contain 740,000 cu. yd. Inv. No. 59-67 Item W-1, St. Martin and Iberia Parishes, LOUISIANA. U. S. Eng., foot of Prytania St., New Orleans, La. Bids Oct. 21. CD 11/6 under LB.

BUILDINGS—LB & CA

▲ **George A. Fuller Co.**, Munsey Bldg., Wash., D. C., CA $4,170,000, constr. 300 bed HOSPITAL, Gallow Rd. at Arlington Blvd., ANNANDALE, VA. Fairfax Co. Health Council, Fairfax County Courthouse, Fairfax, Va. Bids Nov. 14. CD 11/26, under LB.

▲ **Grifton Builders, Inc.**, Grifton, N. C. LB $1,267,000 208 unit MARRIED STUDENTS HOUSING, CHAPEL HILL, N. C. University of North Carolina, Chapel Hill, N. C. Bids Nov. 20. CD 10/30.

G. L. Wilson Bldg. Co., Statesville, N. C. LB $959,000 South Mecklenburg HIGH SCHOOL, CHARLOTTE, N. C. Mecklenburg Co. School Bd. Educ., Charlotte, N. C. Bids Nov. 25. CD 11/25.

W. E. Dale Constr. Co., Morganton, N. C. CA $599,000 CLASSROOM BLDG., Womans College, GREENSBORO, N. C. State of North Carolina, Raleigh, N. C. CD 11/19 under LB.

▲† **Coite Somers Co.**, Box 111, Vidalia, Ga., LB $2,333,300 armed services HOUSING, Proj. 09-603-59-46, WARNER ROBINS, GA. Commander, Warner Robins Air Material Area, Bldg. 1683, Dormitory Area, Warner Robins, Ga., Bids Nov. 25, CD 11/12.

▲ **Walter L. Couse & Co.**, 12740 Lyndon Ave., Detroit, Mich., CA $3,500,000, MAGNESIUM PLANT, SELMA, ALA., Alabama Metallurgical Corp. (Brooks & Perkins, Inc., 1950 W. Fort St., Detroit, Mich. and Calumet & Hecla, 122 S. Michigan Ave., Chicago, Ill.) Owner changed, work now going ahead. CD 7/23/56, under CA.

E. A. Scott & Sons, Box 946 Americus, Ga., LB $924,-145, Houston Co. HOSPITAL, Ga., 220, WARNER ROBINS, GA., Houston Co. Hospital Auth., Perry, Ga. Bids Oct. 16. CD 10/24.

Kaminer Constr. Co., Box 227, Chamblee, Ga., CA $808,520 structural steel and masonry POWER STATION, incl. 48 in. sewer line to Yazoo River, 190 ft. high masonry stack, roads and parking, GREENWOOD, MISS. Greenwood Utilities Comn., Greenwood, Miss. Bids Nov. 17. CD 12/3, under LB.

G. E. Bass, 2715 N. State, Jackson, Miss., LB $531,-330, CLASSROOM BLDG. at Mississippi State University, STATE COLLEGE, MISS. State Bldg. Comn., Woolfolk State Office Bldg., Jackson, Miss. Thomas S. Jones, Box 146, Starkville, Miss., and E. L. Malvaney & Assocs., Millsaps Bldg., Jackson, Miss., archts. Bids Nov. 24.

Steilberg Constr. Co., Box 13, Shively, Ky., LB $909,-600 (10 bidders), 4 story, partial bsmnt., 65 x 372 ft., irregular shape, brick, concrete slab, Men's DORMITORY, Morehead State College, MOREHEAD, KY. Commonwealth of Ky., Div. Purchases, Frankfort, Ky. Bids Nov. 25. CD 11/6.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

December 16 Illinois — December 23 Wisconsin

STREETS AND ROADS

December 16 Illinois — December 23 Wismonsin

▲ **Ill., Chicago**—BA 12/30—Dpt. Purchases, City of Chicago, City Hall, Zone 2, 3-span, 70 ft. wide, 503 ft. long and 40 ft. wide, 177 ft. long steel concrete Milwaukee Ave. Overpass bridge and Augusta Blvd. Ramp bridge at N.W. Rt. superhighway. $2,220,000. Dick Van Gorp, 320 N. Clark St., Zone 10, engr. CD 6/10/57.

BUILDINGS—BA

▲ **Ind., East Chicago**—SCHOOL, etc.—BA 12/18—St. Stanislaus School, 808 W. 150 St., school and auditorium, 4930 Indianapolis Blvd. $1,000,000. Extended date. William M. Butorac, 8404 Hohman Ave., Munster, archt. CD 7/25.

▲† **Ill., Great Lakes**—HOUSING—BA 1/6—Dist. P. Wks. Office, Ninth Naval Dist., Bldg. 1-A, Capehart Family Housing, U. S. Naval Training Center NBy (CH) 10466, Spec. 10466/58. Plans deposit $140. CD 9/17.

HEAVY CONSTRUCTION—LB & CA

▲ **INDIANA**—State Hy. Comn., John Peters, Chn., State House Annex, Indianapolis, Zone 4,
McCalman Constr. Co., 619 Section, P. O. Box 854, Danville, Ill. CA $1,843,483. c. conc. pavement 5.142 mi. Contr. R 4544 I-05-1 (5), Vermillion Co. Bids Sept. 30. CD 10/7, under LB.

▲ **INDIANA**—State Hy. Comn., State House Annex, Indianapolis, Zone 4,
Rieth-Riley Constr. Co., W. Madison St., Box 477, Goshen, Ind. CA $936,443, rein.-con. pavement, Contr. R-4552, DF 720 (21) St. Joseph Co. Bids Aug. 26. CD 9/2, under LB.

▲ **INDIANA**—State Hy. Dpt., John Peters, chn., State House Annex, Indianapolis,
McDougal Hartman Co., 3101 N.E. Adams St., Peoria, Ill. CA $1,387,701, est. $1,590,738. c. conc. 3.461 mi., R-4567-I-05-1 (14) Fountain Co. Bids Oct. 28. CD 11/3, under LB.

▲ **ILLINOIS**—State Hy. Dpt., Div. Hys., Centennial Bldgs., Bids opened 11/25,
Ill.—**V. N. Holderman & Son, Inc.**, 890 Oakland Park Ave., Columbus, O., LB $2,310,879, est. $2,583,000 (6 bidders) Type T-71, 5,268 mi. USR 52-19.58, Village of Chesaoeake F-625, Proj. 623, Lawrence Co.; LB $4,888,107, est. $5,374,900 (9 bidders). Type T-71 and structures, 6.2 mi. USR 25, 3.46 ACI-1101 (11), Warren Co.;
Ill.—**Blazer & Wright, Inc., and Vaughn Coal & Clay Co.**, Box 174, Cheshire, O. LB $936,166, est. $1,050,700 (9 bidders) Type T-35 on B-20 and structure 5.623 mi. SR 160 (0.00-0.31) DS-167 (4) Proj. 617, Gallia Co.;
Ill.—**W. J. Seidensticker Co.**, 3585 E. Fulton St., Columbus, O., LB $1,556,026, est. $1,468,600 (4 bidders) Type T-71 and structures 2.718 mi. USR 35, 0.00, 1934, City of Dayton, F-FG-605 (13) Proj. 618, Greene and Montgomery Counties;
Ill.—**S. J. Groves & Sons Co.**, 500 Wesley Temple Bldg., Minneapolis, Minn. LB $4,714,419, est. $5,187,500 (8 bidders) Type T-71 and structures, 4.147 mi. USR 25-15.60 Hamilton USR 50B-22.02, ACI-1101 (16) ACI-1110 (2) Hamilton Co.;
Ill.—**Fisher Constr. Co.**, 4053 Clifton Ave., Cincinnati, O. LB $3,075,928, est. $3,557,000 (9 bidders) Type T-71 and structures, 5.286 mi. USR 25-0.49, ACI-1101 (19), Proj. 625, Montgomery Co. CD 11/14.

▲ **Huber, Hunt & Nichols, Inc.**, 2450 S. Tibbs Ave., Indianapolis, Ind., CA $1,694,725, 80,000 sq. ft. fieldhouse, BLOOMINGTON, IND. Trustees, Indiana University, Bloomington, Ind. Bids Nov. 5. CD 11/25, under LB.

▲ **ILLINOIS**—Dpt. P. Wks., Div. Hys., Centennial Bldg., Springfield,
S. J. Groves & Sons, 1104 E. Reynolds, Springfield, Ill. CA $2,344,532, paving, interchange ramps on FA1-4 southeast of Anna, Union Co. Awarded Nov. 18. CD 11/5, under LB.

▲ **Robert A. Black, Inc.**, 13912 S. Halsted St., Chicago, Ill., LB $1,168,831, concrete paving, concrete curbs, gutters, storm sewers west of E. River Rd. to east of Canfield Rd. on N.W. Expressway, Proj. BU-265 (37); LB $339,590, wid'n., paving 1.79 mi. Vermont St. from Division St. in Blue Island to 127 St. in Chicago, Section 181-0204-mft, CHICAGO, ILL. Bd. Comrs. Cook Co., County Bldg., Chicago, Ill. Bids Nov. 18. CD 11/10.

T. V. John & Son, 13555 W. Juneau Blvd., Elm Grove, Wis., LB $655,300 (10 bidders), general contract PROPAGATION CENTER, MILWAUKEE, WIS. Milwaukee Co. Park Comn., Milwaukee, Wis. Bids Nov. 26. CD 11/5.

▲ **MICHIGAN**—State Hy Dpt., Stevens T. Mason Bldg., Lansing,
Mich.—**Hertel-Deyo**, 5205 Division south, Grand Rapids, Mich. and **C. E. Utterback**, Mt. Pleasant, Mich. (joint contractors), CA $611,688, 2.6 mi. wid'n. and resurf. Eastman Rd., US-10 BR from Ellsworth St. north to proposed US-10 by-pass in Midland, Midland Co.;
Mich.—**Cooke Contg. Co.**, 11116 Penobscot Bldg., Detroit, Mich., CA $729,136, 2.3 mi. wid'n. and resurf. M-14 (Plymouth Rd.) from Telegraph Rd. east to Auburn St. in Redford Twp. and Detroit, Wayne Co. Bids Oct. 22.

▲ **MICHIGAN**—State Hy. Dpt., Stevens T. Mason Bldg., Lansing,
S. D. Solomon & Sons, 3760 Elizabeth Lake Rd., Pontiac, Mich., CA $2,034,441, 257 ft. bridge at County Road 687 south of Hartford; 236 ft. span at County Line road to carry Expressway over Pine Creek south of Hartford, 41 ft. bridge to carry Expressway over Mill Race Creek 1 mi. southeast of Watervliet, Van Buren Co. Bids Oct. 22.

▲ **MICHIGAN**—State Hy. Dpt., Stevens T. Mason Bldg., Lansing, Bids opened 11/19,
Mich.—**Canonie Excavating Co.**, South Haven, Mich., LB $2,352,842, 6.1 mi. grading, drainage and dual 24 ft. concrete roadways and five structures on section from US 131 (Westnedge Ave.) south of Kalamazoo west to 6th St. in Texas Twp., Kalamazoo Co. CD 11/6;
Mich.—**Holloway Constr. Co.**, 29350 Joy Rd., Livonia, Mich., LB $1,810,798, 6.1 mi. dual 24 ft. concrete roadways from 6th St. in Kalamazoo Co., westerly to Schussler Rd. in Van Buren Co., about 4 mi. east of Paw Paw and 3 structures, Kalamazoo and Van Buren Counties. CD 11/12;
Mich.—**Louis Garavaglia**, 24249 Mound Rd., Center Line, Mich., LB $1,262,083, 5.4 mi. grading, drainage and dual 24 ft. concrete roadways, incl. base wid'n. bit. concrete surf. M 24 from Oxford Rd. north to Brauer Rd., Lapeer and Oakland Counties;
Mich.—**The Kutchins Co.**, 1516 Moores River Dr., Lansing, Mich., LB $189,646, 0.2 mi. c. conc. pavement wid'n. Clio Rd. north from Pierson Rd. and 1.3 mi. of Pierson Rd. west from Clio Rd., Genesee Co. CD 11/6.

BUILDINGS—LB & CA

▲ **Knowlton Constr. Co.**, 1133 W. Columbus St., Bellefontaine, O. CA $3,363,400, general contract, 9 story, 400 bed, cross shaped Grant Hospital, 7th and State Sts., COLUMBUS, O. Franklin Co. Hospital Comn., Court House, Columbus, O. Grand total $4,997,082. Bids Nov. 26. CD 10/20;
Limbach Co., 851 Williams Rd., Columbus, O. CA $1,149,060, mech. contr., 9 story Grant Hospital (Columbus, O.);
Electrical Contractors, Inc., 1343 Holly Ave., Columbus, O., CA $484,622, elec. contract, 9 story, Grant Hospital (Columbus, O.).

Peterson Constr. Co., Wapakoneta, O. LB $644,227, est. $639,825, general contract 100 bed medical and surgical HOSPITAL, Dayton State Hospital, DAYTON, O. Ohio Dpt. Mental Hygiene & Correction, 220 S. Parsons, Columbus, O. CD 1/12/56.

▲ **Hunkin-Conkey Constr. Co.**, 1740 E. 12 St., Cleveland, O. and **Frazier-Davis Co.**, 1319 Macklind St., St. Louis, Mo., CA Est. $3,000,000, SURFACE SALT PLANT, CLEVELAND, O. International Salt Co., Scranton Life Bldg., Scranton 3, Pa. CD 7/30/57.

Seltzer Bldg. Co., 4080 Park Fulton Oval, Cleveland 9, O., CA Est. $750,000, SHOPPING CENTER, incl. 36,000 sq. ft. rental space, 9,000 sq. ft. ice space, E. 40 St. and Scovill Ave., CLEVELAND, O. George N. Seltzer, 4080 Park Fulton Oval, Cleveland 9, O.

Grewe Contractor Corp., 2524 E. Pontiac St., Fort Wayne, Ind., CA Est. $750,000, 3 story, 75,000 sq. ft. MEDICAL CLINIC, 2825 Fairfield Ave., 100-car parking lot, FORT WAYNE, IND. Fairfield Medical Clinic, 2638¼ S. Anthony Blvd., Fort Wayne, Ind.

Morris Handler Co., 2727 W. Chicago Ave., Chicago, Ill., CA $600,000, MEDICAL CENTER and ADMINISTRATION BLDG. for Local 100, Ogden, Paulina and Adams Sts., CHICAGO, ILL. Amalgamated Meat Cutters & Butcher Workman Union, 2800 Sheridan Rd., Chicago, Ill. Fridstein & Fitch, 228 N. LaSalle St., Chicago, Ill., archt.

▲ **Selzer-Ornst Co.**, 6222 W. State St., Wauwatosa, Wis., CA Est. $2,000,000, 8 story, concrete, brick FACTORY addn., MILWAUKEE, WIS. Allen-Bradley Co., 136 W. Wisconsin Ave., Milwaukee, Wis. Scott & Kloppenburg, 5623 N. Lake Dr., Milwaukee, Wis., archts.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

December 16 Iowa — December 19 North Dakota
December 23 Minnesota
December 30 Wisconsin & Minnesota

STREETS AND ROADS

December 16 Iowa — December 19 North Dakota
December 23 Minnesota

▲† **Arkansas**—BA 2/10—U. S. Eng., P. O. Box 867, Little Rock, constr. Greers Ferry Dam on Little Red River, 79 mi. above mouth in Cleburne Co. near Heber Springs, concrete gravity type structure 1,700 ft. long, maximum heights 243 ft. above stream bed with 25 ft. roadway on top dam to have controlled spillway with 6 spillway gate 2 penstocks with gate and permenent conduit with gate, CIV ENG-03-050-59-22. Over $5,000,000. CD 9/19.

BUILDINGS—BA

▲ **Kan., Wichita**—MOTEL—BA 12/19—Motel Investors, Inc., c/o Mobley & Safely, Archts. & Assocs., archts., 915 N. Broadway, 3 story motel, incl. swimming pool, East Kellogg west of Kansas Turnpike Interchange. $1,000,000. CD 7/25.

Mo., St. Louis—LABORATORY, etc.—BA 12/30—City, Bd. P. Service, 304 City Hall, Zone 3, laboratory and connecting passage for Max C. Starkloff City Hospital, Carroll and Grattan Sts. $630,000. Plans deposit $65. Jamieson, Pearl, Hammond & Grolock, 1876 Arcade Bldg., Zone 1, archts. Harry F. Wilson Assoc., 4908 Delmar Blvd., Zone 8, engrs. R. L. Easton & Assocs., 5423 Southwest Ave., Zone 9, structural engrs. CD 5/13.

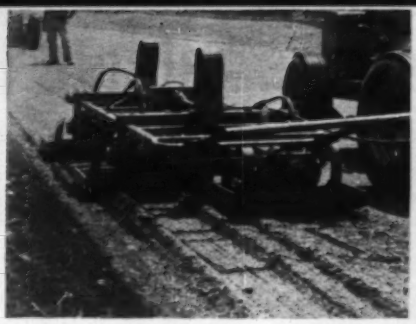
Mo., Mount Vernon—HOSPITAL FACILITIES—BA 1/6—State Div. P. Bldgs., Planning & Constr. Section, 100 State Capitol, Jefferson City, 4 story, brick, stone, etc. hospital facilities for tubercular patients at Missouri State Sanitorium. $645,000. Plans deposit $150. Bruce F. Barnes, Cresthaven, Patterson, archt. CD 1/25/56.

Minn., Owatonna—HOSPITAL—BA 1/7—City, City Hall, 2 story, bsmnt. city hospital. $750,000. Plans de-

(Continued on page 108)

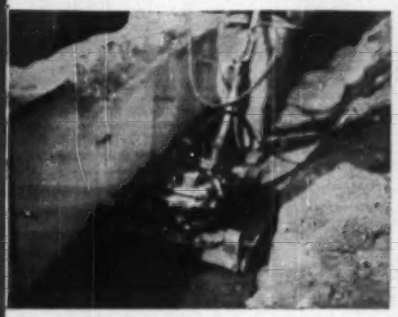
10 Leads *to better, faster results and BIGGER PROFITS!*

MACADAM DENSIFICATION. The Jackson Multiple Compactor gives you base and sub-base compaction at its quickest and best. Each of the 6 units in workhead delivers 4200 3-TON BLOWS per minute.



PAVEMENT WIDENING. Any arrangement desired of the vibratory units of the Jackson to fit the job most advantageously and provide 100% of required density in ONE PASS is easily and quickly made.

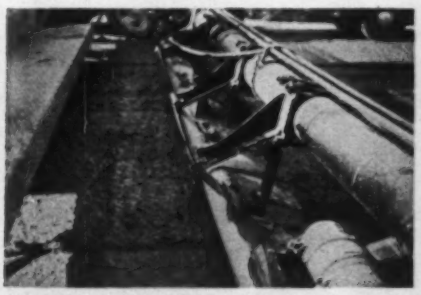
GRANULAR SOIL FILLS. The Multiple Compactor quickly achieves specified density, gets into places bigger, more expensive equipment cannot reach. Individual units can be detached, operated as manually guided compactors.



SOIL COMPACTION. Self-propelling, the Jackson Compactor, with 12" to 26" interchangeable bases, achieves specified density of granular soils in 6" to 8" layers at the rate of 600 sq. yds. per hr. Perfect for bridge and pipe line fills, concrete floor sub-bases and similar applications.

BLACKTOP WIDENING & PATCHING. The same machine operated from power plant on auto-trailer with pickup for Compactor is most efficient means of blacktop pavement patching, paving walks, drives, etc. Will compact up to 600 sq. yds. per hr close to maximum density.

TWIN-UNITS — ONE OPERATOR. With a two-unit, side-by-side or tandem hookup of JACKSON COMPACTORS, one man can readily do the work of two, since the compactors are self-propelling and he has only to guide them.



CONCRETE VIBRATION FOR HIGHWAY AND AIRPORT PAVING

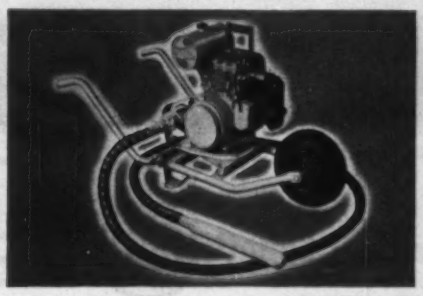
INTERNAL TYPE; super-powered, gives full width internal vibration through full depth of very thick slabs. Saves time, cement; provides greater density and compressive strength.

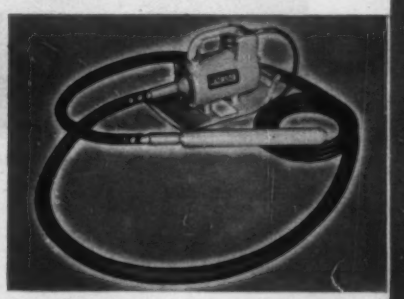
SURFACE TYPE; does perfect job of vibrating all mixes in depths used on highway projects. The owner of a JACKSON Paving Tube can quickly switch from internal to external vibration, or vice versa, at minimum expense.

MUNICIPAL PAVING: This vibratory screed strikes off to all crowns, undercuts at curb or sideform, works right up to and around obstructions, is rolled back for second passes on 4 rollers. Most productive and convenient screed made.

JACKSON
VIBRATORS, INC.
LUDINGTON, MICHIGAN

FOR SALE OR RENT AT YOUR
JACKSON DISTRIBUTOR

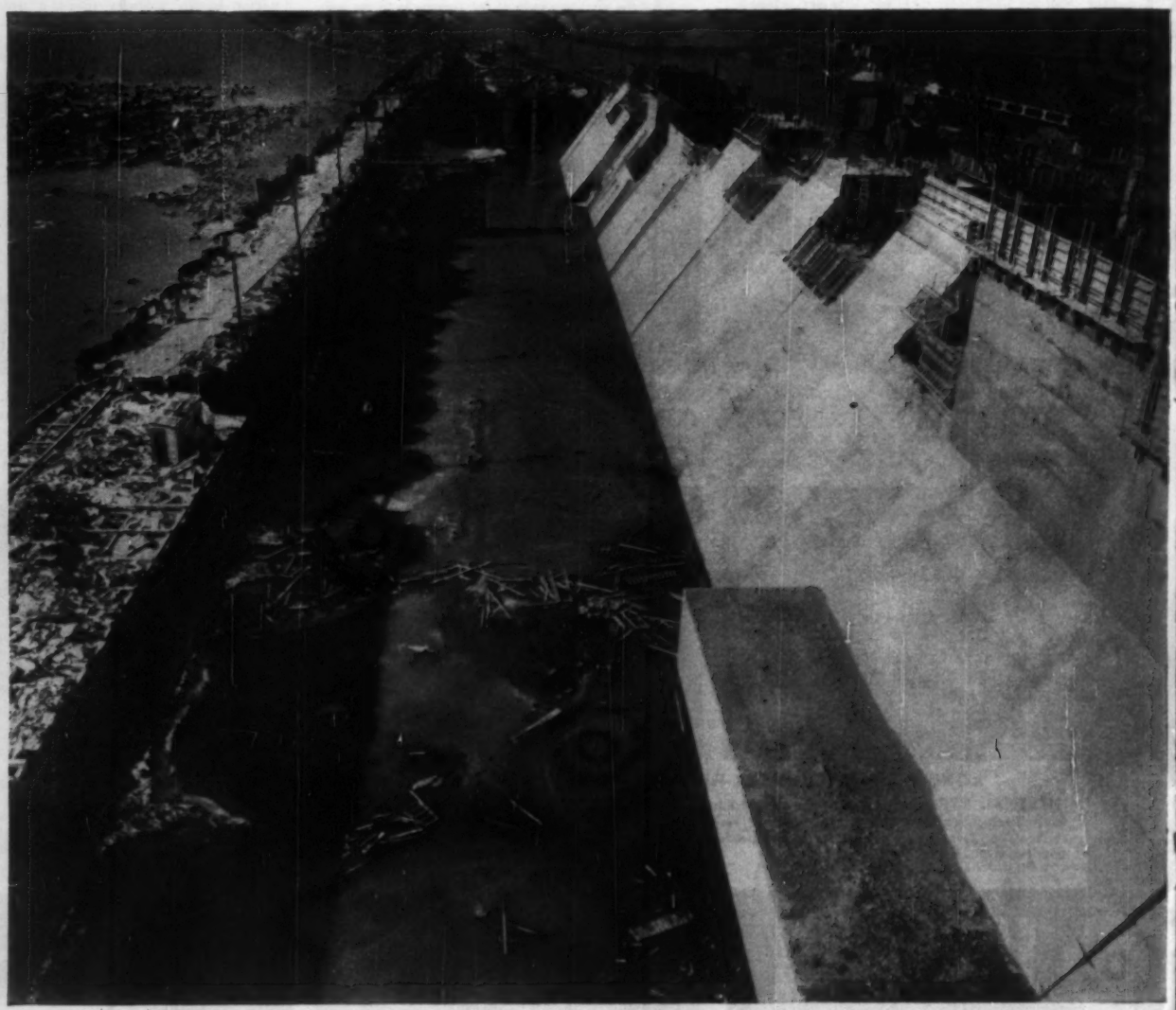




GENERAL CONSTRUCTION

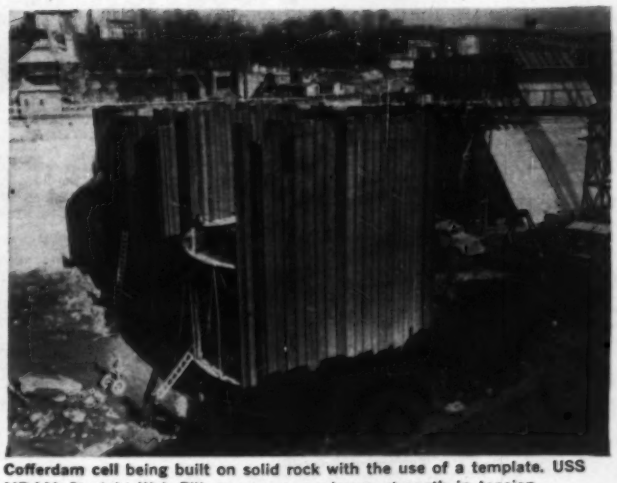
(Left); 6 H.P. engine-driven, flexible shaft vibrator. Excellent for both thin and thick sections. (Right); 2½ H.P. electric vibrator (for light-socket operation). Handy as a pocket in a shirt, powerful enough to handle all general construction concrete vibration with shafts up to 28'.

World's highest single-lift lock built with USS Steel Sheet Piling cofferdams



Downstream view showing new Wilson Lock with cofferdam A at left and E at the far end of the lock.

View showing the new temporary canal in use with cofferdam F in background shutting off the entrance of the old canal while it is being deepened by 10 feet.



Cofferdam cell being built on solid rock with the use of a template. USS MP-101 Straight Web Piling assures maximum strength in tension.

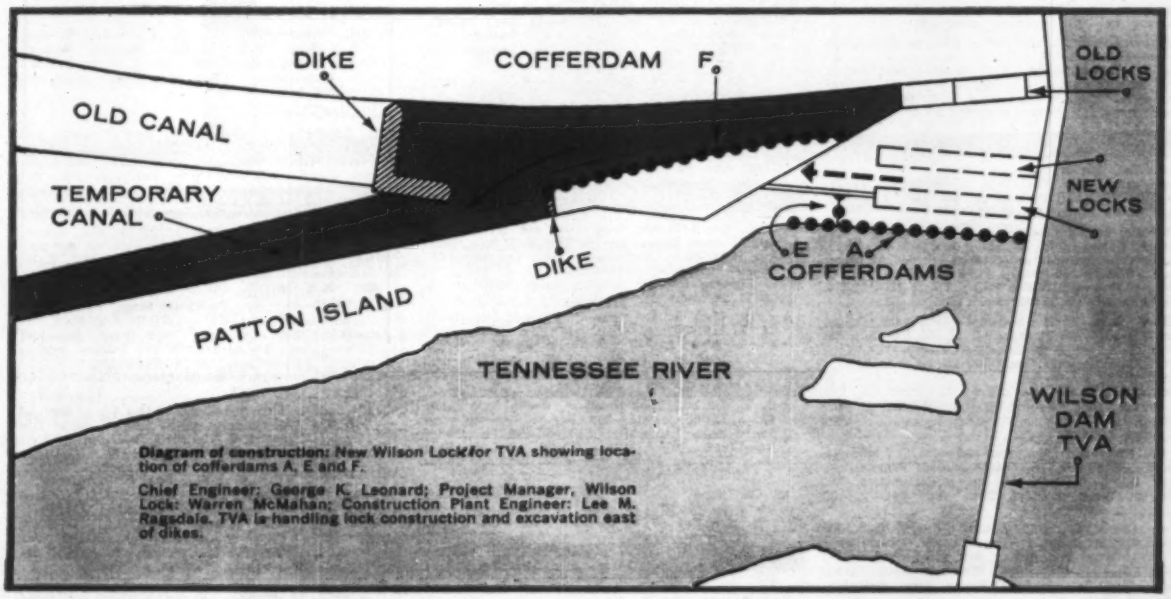


Diagram of construction: New Wilson Lock for TVA showing location of cofferdams A, E and F.

Chief Engineer: George K. Leonard; Project Manager, Wilson Lock: Warren McMahan; Construction Plant Engineer: Lee M. Ragsdale. TVA is handling lock construction and excavation east of dikes.

TVA's new 100-foot-high Wilson Lock at Muscle Shoals, Alabama will have the distinction of being the world's highest single-lift lock. The $35 million construction project includes a 110 x 600 ft. lock chamber through the existing dam, 4 million cubic yards of canal excavation, and a high-level fixed span bridge over the huge lock.

It is quite an engineering feat to construct a new lock through an old dam without interrupting navigation more than a few days. The first two cofferdams, A and E, were built to keep the Tennessee River out of the new lock area. These took a total of 32 cells, each 36.61 feet in diameter, with the USS MP-101 Straight Web Piling ranging from 38 feet to 48 feet in length. The cofferdams were set on rock; consequently, there was no penetration. It took an average of three days to construct and fill each cell.

Another cofferdam, F, was built to direct the flow of water into a new temporary canal through Patton Island and to dry up the old canal which will be made 10 feet deeper. The 58 cells in this cofferdam are 23.88 feet in diameter and are also set on rock. The piling is all in 20-foot lengths of USS MP-101. There was no penetration, and the cells were constructed and filled on an average of one per day.

A total of 3,953 tons of USS MP-101 Straight Web Piling was used for these three cofferdams—and all of it was delivered on schedule. For the new bridge (not shown), USS H-Beam Bearing Piles were used. This is another case that illustrates the excellent deliveries made possible by U. S. Steel's large production facilities and attention to customers' needs. When you want any type of piling—steel sheet piling or H-Beam bearing piles—call the United States Steel office near you.

USS is a registered trademark

United States Steel Corporation — Pittsburgh
Columbia-Geneva Steel — San Francisco
Tennessee Coal & Iron — Fairfield, Alabama
United States Steel Export Company

USS United States Steel

(Continued from page 104)

posit $25. Ellerbe & Co., E. 505 First National Bank Bldg., St. Paul, archts. CD 3/7, under LB.

BUILDINGS—SLC

▲ **Colo., Denver**—Y.M.C.A. BLDG—Young Men's Christian Assn., 25 E. 16 Ave., soon lets contract 125x150 ft. on 1st three stories, 40x150 ft. on top 5 stories, addn. existing YMCA building, 16 and Lincoln Sts. $1,200,000. Simon & Hipp, 1922 E. 18 St., archts. CD 11/20.

HEAVY CONSTRUCTION—LB & CA

▲ **Iowa**—State Hy. Comn., Ames,

Iowa—Booth & Olson, Inc., 529 Ins. Exch. Bldg., Sioux City, Iowa, CA **$1,657,421**, c. conc. 5.877 mi. I-80-2 (8) 70, Cass Co.; CA **$678,210**, c. conc. 12.182 mi., F-472 (2), Fremont and Page Counties;

Iowa—Alexander Constr. Co., 4641 Hiawatha Ave., Minneapolis, Minn., CA **$1,645,761**, c. conc. pavement wid'n., and b. conc. resurf. 6.927 mi., I-80-2 (11) 89, Adair Co.;

Iowa—Kaser Constr. Co., 3111 Ingersoll Ave., Des Moines, Iowa, CA **$1,069,062**, b. conc. 20.335 mi. F-418 (4), Mahaska and Poweshiek Counties;

Iowa—Lee & Johnson, Inc., 215 Ins. Exch. Bldg., Sioux City, Iowa, CA **$523,501**, b. conc. 11.451 mi. F-51 (7), Guthrie Co. Grand total $5,573,955. Bids Nov. 18. CD 11/24, under LB.

▲ **Massman Constr. Co.**, 3917 Broadway, Kansas City, Mo., CA **$1,451,400**, WW imprvs. and extens., constr. new raw water intake, gate supporting structure, furnishing, installing 2 river crossing pipe lines, Sections 1 and 2, OTTUMWA, IOWA. Municipal Waterworks, Bd. Trustees, Ottumwa, Iowa. Bids Oct. 23, awarded Nov. 17. CD 10/30, under LB.

▲ **MISSOURI**—State Hy. Dpt., Jefferson City. Bids opened 11/25,

Mo.—Clarkson Constr. Co., 4133 Gardner Ave., Kansas City 20, Mo. and **Union Constr. Co.**, 1401 Fairfax Trafficway, Kansas City, Kan., LB **$633,902** (5 bidders), 24 ft. concrete pavement 3.508 mi. Vernon Co.;

Mo.—Atkinson-Windle Co., 10 Hickory St., Chillicothe, Mo., **$338,549** (2 bidders), 24 ft. concrete pavement 1.955 mi. Harrison Co.;

Mo.—Howard Constr. Co., 1504 North Osage, Sedalia, Mo., LB **$126,478** (9 bidders), gra. surf. 7.523 mi. Cape Girardeau Co. CD 11/6.

† **Mountain States Constr. Co.**, Box 648, Edgemont Branch, Golden, Colo., CA **$706,385**, est. $734,845, Readiness Crew Bldg. and utilities, Forbes Air Force Base, ENG-23-028-59-19, TOPEKA, KAN. U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo. Bids Nov. 20. CD 11/26, under LB.

▲ **Elliott Corp.**, 5738 N. Central Expressway, Dallas, Tex. LB **$870,900** (1 unit) LB **$1,740,700** (2 units) installation turbine generators, GARLAND, TEX. City, City Hall, Garland, Tex. CD 10/3, under Public Buildings;

Babcock & Wilcox Corp., c/o A. M. Lockett Co., Life of America Bldg., Dallas, Tex. LB **$367,417** (1 unit) LB **$716,092** (2 units) steam generating units (Garland, Tex.)

▲† **Bud King Constr. Co.**, 1203 Wyoming St., Missoula, Mont., LB **$3,167,176**, Paonia Colorado Pamnia Dam, Spec. DC 5117, COLORADO. Bureau Reclamation, Dpt. Interior, Grand Junction, Colo. Bids Dec. 2. CD 10/20.

Latimer Constr. Co., 930 Wyandot, Denver, Colo., CA **$685,409**, est. $660,000, sewer constr. located along Valley Highway and Arizona Ave., Colo. Proj. I-25-2 (26) 205, DENVER, COLO. Colorado State Highway Dpt., 4201 East Arkansas, Denver, Colo. Bids Nov. 26. CD 11/20.

BUILDINGS—LB & CA

Swenson Constr. Co., 3305 Terrace, Kansas City, Mo., CA **$800,165**, field stone SEMINARY, incl. administration bldg., library, classroom and faculty offices, KANSAS CITY, MO. Mid-Western Baptist Theological Seminary, 20 W. 9th, Kansas City, Mo. Bids Nov. 6. CD 10/30.

Frazier-Davis Constr. Co., 1319 Macklind St., St. Louis, Mo., CA **$700,000**, 1 story, 130,000 sq. ft. WAREHOUSE, Lindbergh Blvd. and Page Ave., ST. LOUIS COUNTY, MO. A. S. Aloe Co., 19 and Olive, St. Louis, Mo. Frederick Dunn & Assoc. Architects, Shell Bldg., 1221 Locust St., St. Louis 3, Mo., archts.

▲ **Martin B. Semands, Inc.**, Box 979, Conroe, Tex., LB **$472,690**, Unit L, 4 story women's DORMITORY, HUNTSVILLE, TEX. Sam Houston State Teachers College, Huntsville, Tex. Bids Nov. 20. CD 11/5;
H. A. Lott, Inc., Box 25005, Houston, Tex., LB **$750,000** (2 units) 2 story, CO-OP HOME FOR MEN; eight 1 story STUDENT FAMILY APARTMENTS (Huntsville Tex.).

▲ **W. P. Francis**, Denver Club Bldg., Denver, Colo., Owner Builds, **$35,000,000**, 2,300 brick HOMES, north of Denver-Boulder Turnpike between Valley Highway and Zuni St., DENVER, COLO.

▲ **Perl-Mack Constr. Co.**, 405 Vallejo St., Denver, Colo. Owner Builds. **$20,000,000**, 1,600-1,800 brick HOMES; **$500,000**, SHOPPING CENTER addn., WESTMINSTER, COLO. CD 11/27.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
January 7 California

▲† **California**—BA 12/23—U. S. Eng., 751 S. Figueroa St., Los Angeles, constr. Ventura Co. Harbor Breakwater and jetties near Port Hueneme, ENG-04-353-59-18, $3,250,000. CD 9/23.

▲† **Calif., Point Mugu** — ENVIRONMENTAL SIMULATION FACILITY—BA 1/6—Pub. Wks. Office, Eleventh Naval Dist., 1220 Pacific Hy., San Diego, constr. environmental simulation facility at Naval Air Missile Test Center, Spec. 19518-58. $1,000,000-$2,500,000. CD 9/17/57.

▲† **Calif., March Air Force Base**—ALERT FACILITIES, etc.—BA 1/7—U. S. Eng., 751 S. Figueroa St., Los Angeles, constr. alert facilities, alert apron, readiness crew bldg. and utilities, ENG-04-353-59-38. $2,000,000. CD 9/9.

▲† **Calif., Sacramento**—RUNWAY PRIMARY—BA 1/9—U. S. Eng., 1209 8th St., runway primary strengthening, and facilities, McClellan Air Force Base, Spec. 2340-A, ENG-04-167-59-17. $1,800,000. CD 5/14, under LB.

▲† **Calif., Sacramento**—FLIGHT TEST HANGAR—BA 1/23—U. S. Eng., 1209 8th St., trussed steel arch flight test hangar with precast concrete tilt-up walls, hangar access apron and taxiway and associated utilities, McClellan Air Force Base, Spec. 2536, ENG-04-167-59-27. $2,000,000. CD 9/6.

BUILDINGS—BA

▲ **Calif., San Pedro**—HOSPITAL—BA 12/23—Project Architects, 3460 Wilshire Blvd., Los Angeles, 4 story concrete, masonry, San Pedro Community Hospital Addn. for San Pedro Community Hospital Bd. Dir., 1305 W. 6th St., $1,900,000. CD 2/27.

HEAVY CONSTRUCTION—LB & CA

ARIZONA—State Hy. Dpt., 206 S. 17 Ave., Phoenix,

Tanner Constr. Co., 731 N. 19 Ave., Phoenix, Ariz., CA **$779,557**, est. $872,913 1.1 mi. new alignment U. S. 80 Denson-Douglas Highway, Cochise Co. Bids Nov. 14, CD 11/26, under LB.

▲ **CALIFORNIA**—State Div. Hys., 1120 N. St., Sacramento, Bids opened 12/3,

Griffith Co., 1060 S. Broadway, Los Angeles 15, Calif. LB **$5,465,760** (12 bidders), constr. 11.9 mi. 4 lane expressway on new alignment U. S. Hy. 466 between Tower Line Rd. and Bear Mountain Ranch, incl. 3 bridges and grade separation, V1-Ker-58-D, E, Kern Co. CD 10/29.

† **Fredericksen & Kasler**, 212 E. 13th St., Sacramento, Calif., CA **$739,439**, East Twin and Warm Creeks channel imprv. Central Ave. to Santa Ana River, Santa Ana River Basin, Redlands, in San Bernardino Co., ENG-04-353-59-10, CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Nov. 6. CD 11/12, under LB.

▲ **Carter Mack Builders**, Box 457, Harbor City, Calif., CA **$1,115,904**, rein.-con., structural steel transit shed at Berths 143-44, Los Angeles Harbor, LOS ANGELES, CALIF. City Harbor Dpt., 1300 City Hall, Los Angeles, Calif. Bids Nov. 18. CD 11/24, under LB.

† **C. S. Williams**, 7662 Broadway, Lemon Grove, Calif. CA **$723,000**. constr. 200 men bachelor quarters, San Nicholas Island, Naval Air Missile Test Center, NBy-17665, POINT MUGU, CALIF. Eleventh Naval Dist., 1220 Pacific Hy., San Diego, Calif. Bids Nov. 4. CD 11/12, under LB.

▲† **Cal Hayes Builders, Inc.**, 13006 Saticoy St., North Hollywood, Calif. CA **$1,100,000**. air force proj. consisting 67 family type officer housing units in Dpt. Defense, Mather Air Force Base, ENG-04-162-59-10, SACRAMENTO, CALIF. Base Procurement Officer, Mather Air Force Base, Sacramento, Calif. Bids Oct. 30. CD 11/3, under LB.

BUILDINGS—LB & CA

▲ **California Spray-Chemical Corp.**, Richmond, Calif., Day Labor, **$4,600,000**, FERTILIZER PLANT, KENNEWICK, WASH. CD 10/8.

Rubino & Gullickson Co., P.O. Box 2416, 41 South Wilson Way, Stockton, Calif. CA **$727,400**. wood frame constr. Clayton Valley Intermediate SCHOOL, CONCORD, CALIF. Mt. Diablo Unif. School Dist., Concord, Calif. Bids Oct. 14. CD 10/23, under LB.

Hale Co., 1777 W. Lincoln St., Santa Ana, Calif., CA **$561,040**, 42 stucco DWELLINGS, Conway Ave., Tract 2671, COSTA MESA, CALIF. College Mesa Co., Box 2277, Brookhurst Sta., Anaheim, Calif. Bulot, Quigley, Clark, 1102 W. 7 St., Santa Ana, Calif., archts.

▲ **Flowers & Shirley and R. C. Allan**, 2150 Princeton Ave., Los Angeles, Calif. LB **$1,031,000** (10 bidders), constr. Woodruff JUNIOR HIGH SCHOOL, DOWNEY, CALIF. Downey Union High School Dist., 8521 E. Firestone Blvd., Downey, Calif. Bids Dec. 2. CD 11/7.

Jess Constr. Co., 1657 N. Magnolia St., El Cajon, Calif., Owner Builds, **$574,000**, 41 DWELLINGS, Tiny Place, N. 3rd St., Fiesta Lane, EL CAJON, CALIF.

▲ **Noyes Roach Constr. Co. & C. L. Peck**, 5017 Telegraph Rd., Los Angeles, Calif. CA **$2,870,255**, constr. Bolsa Grande HIGH SCHOOL and Rancho Alamitos HIGH SCHOOL addns., GARDEN GROVE, CALIF. Garden Grove Union High School Dist., 11271 Stanford St., Garden Grove, Calif. Bids Nov. 18, awarded Nov. 26. CD 11/21, under LB.

▲ **Tietz Constr. Co.**, 11900 Gilbert St., Garden Grove, Calif. Owner Builds. **$1,131,000**. 92 DWELLINGS, Tract 2412, GARDEN GROVE, CALIF.

Walter R. Sant & Sons, 1461 San Marino Ave., San Marino, Calif., CA **$767,970**, 63 dwellings, Tract 2071, ORANGE, CALIF. Roslaita Homes Co., 7592 Chapman, Anaheim, Calif.

Lawrence Constr. Co., 3020 V St., P. O. Box 5007, Sacramento, Calif. CA **$698,000**, 3 story steel frame BANK and OFFICE BLDG., 12th and J Sts., parking space in bsmnt., SACRAMENTO, CALIF. McClatchy Realty Co., c/o Secy., "J" St., Sacramento, Calif. CD 12/1, under LB.

▲ **Engstrum & Nourse**, Bowe Folsom St., San Francisco, Calif., LB **$1,631,700** (10 bidders), general contract two 6 story 153,400 sq. ft. rein.-con. RESIDENCE HALLS, San Francisco State College, W. O. 4005GC-68, SAN FRANCISCO, CALIF. State Div. Architecture, 1120 N. St., Sacramento, Calif. Bids Dec. 2. CD 10/31.

Louis C. Dunn Co., 681 Market St., San Francisco, Calif., CA **$844,000**. Longfellow ELEMENTARY SCHOOL, Morse and Lowell Sts., SAN FRANCISCO, CALIF. City and San Francisco County, Dpt. P. Wks., c/o Dir., Room 282, City Hall, San Francisco, Calif. Awarded Nov. 25. CD 11/18, under LB.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
February 3 Ontario
STREETS AND ROADS
December 16 Alberta January 7 Ontario

▲ **Ont., Hamilton**—BA 1/7—City, City Hall, tunnel interceptor sewers, Woodward Ave. sewage treatment plant, Contrs. 2 and 3, incl. 14,200 ft. 7½ and 8½ ft. tunnel. $2,300,000. Plans deposit $50. Proctor & Redfern, 75 Eglinton Ave. E., Toronto, engr. CD 2/7/56.

BUILDINGS—BA

▲ **Ont., Ottawa**—RESEARCH—BA 1/14—Dpt. P. Wks., Hunter Bldg., 4 or 5 story, National Research Council communications bldg., incl. 2 wings, $3,000,000. Plans deposit $400. Jean Serge LeFort, 86 Greenefild Ave., archt.

BUILDINGS—SLC

Alta., Edmonton—BANK—The Royal Bank of Canada, 360 St. James St. W., Montreal, Que., soon lets contract 2 story, bsmnt., masonry with structural steel frame bank, 105 St. and Jasper Ave. $600,000. Bell, McCulloch & Assocs., 10607-100 Ave., archts. CD 10/8.

HEAVY CONSTRUCTION—LB & CA

▲ **McNamara Constr. Co. Ltd.**, 13120-125 Ave., Edmonton, Alta., LB **$2,933,301**, various buildings and services, Air Force Refuelling Base, COLD LAKE, ALTA. Defence Constr. (1951) Ltd., 56 Lyon St., Ottawa, Ont. Bids Nov. 20. CD 11/11.

▲ **ONTARIO**—Dpt. Hys., Parliament Bldgs., Toronto, Bids opened 11/26,

Hacquoil's Constr. Co. Ltd., 1408 Brown St., Fort William, Ont., LB **$1,092,570** (10 bidders) grading, culverts, granular base 7.6 mi. Trans Canada Hy. 17 and CPR overhead bridge at Rossport (58-279). CD 11/13.

Tracy Constr., Inc., 905 Decelles St., Tracy, Que. LB **$672,024** (16 bidders), runway extens., Stage One, Toronto Island Airport, TORONTO, ONT. Dpt. P. Wks., Hunter Bldgs., Ottawa, Ont. Bids Nov. 26. CD 10/31.

BUILDINGS—LB & CA

▲ **Shenkman Properties Ltd.**, 77 Metcalfe St., Ottawa, Ont. Owner Builds **$1,300,000** 12 story, 70x116 ft. 108 unit, concrete, brick APARTMENT, OTTAWA, ONT. C. B. Greenberg, 380 Elgin St., Ottawa, Ont., archt. W. Sefton & Assocs. Ltd., 901 Yonge St., Toronto, Ont., engrs.

▲ **Dell Constr. Co. Ltd.**, 2461 Bloor St. W., Toronto, Ont., CA **$2,185,810**, 200 row HOUSING and SEMI-DETACHED UNITS with services at Canadian Army Camp, PETAWAWA, ONT. Central Mortgage & Housing Corp., 650 Lawrence Ave. W., Toronto, Ont. CD 12/1, under LB.

U. S. POSSESSIONS

HEAVY CONSTRUCTION—BA

▲† **Canal Zone, Balboa**—BA On Or About 12/15—Panama Canal Co., constr. Balboa Bridge West Approach Grading. CD 7/21.

FOREIGN

HEAVY CONSTRUCTION—BA

▲ **Iraq**—BA 2/25—Development Bd., Ministry of Development, Baghdad, constr. Batmah Barrage, Contract 1. $22,400,000. Plans deposit $28. Extended date. Binnie, Dacon & Gourley, Artillery House, Artillery Row, London, S. W. 1, England, engrs. CD 7/10.

▲ **Egypt, Alexandria** — BA 4/11 — Military Factories Admin., War Ministry, United Arab Republic, Cairo, 140 x 850 ft. dry dock, quay wall, pumping plant, housing, administrative units.

AMERICANS ABROAD

BUILDINGS—LB & CA

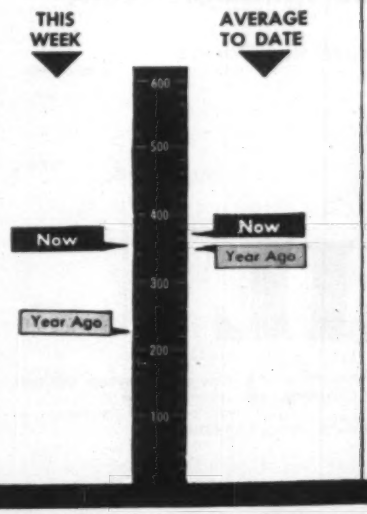
▲ **Bechtel Corp.**, Administration Dpt., 220 Bush St., San Francisco, Calif., U. S. A. CA Total est. $30,000,000, REFINERY at Slagen, Vestfold Co., NORWAY. Esso-Raffinerier, Norge (Standard Oil Co. of New Jersey, 30 Rockefeller Plaza, New York, N. Y., U. S. A.). Sverdrup & Parcel, Inc., 915 Olive St., St. Louis, Mo., U. S. A., engr. CD 10/29/57.

(Proposal Advertisements see pp. 119 to 121)

Construction Scoreboard

ACTIVITY THIS WEEK

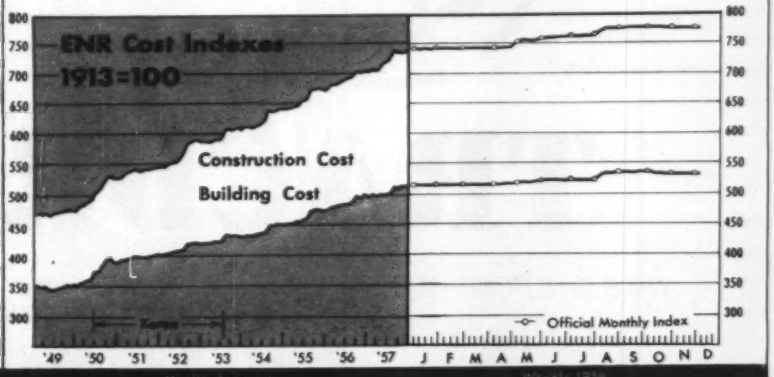
Contract Awards
Millions of Dollars



COST INDEXES AS OF NOW

ENR INDEXES (1913=100), 20-cities' average	Week of Dec. 4 1958	% Change from Nov. 6 1958	% Change from Dec. 5 1957
Construction Cost	773.87	−0.03	+4.85
Building Cost	534.85	−0.01	+3.60

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850. 1949 = 100. Divide Construction Cost by 4.770; Building Cost by 3.518.



AMOUNT OF CONTRACTS LET

By Ownership	This Week millions	Cum. 50 wks 1958 millions	Chge '57-'58 %
All Heavy Constr.	$353.3	$18,565.2	+6
Private	170.9	7,498.7	−8
Public	182.4	11,066.5	+19
State & Municipal	139.2	8,318.9	+17
Federal	43.2	2,747.6	+28
By Type of Work			
Public			
Waterworks	5.2	296.9	−16
Sewerage	7.5	589.7	+12
Bridges*	10.1	689.5	−10
Highways	65.9	3,601.5	+27
Earthwork, Waterways	13.1	1,002.5	+6
Buildings, Excl. Housing	51.7	2,525.6	+11
Housing	13.1	1,044.2	+70
Unclassified	15.8	1,326.7	+40
Private			
Buildings			
Mass Housing	113.9	3,628.1	+22
Commercial	20.0	1,759.1	+4
Industrial	32.2	1,700.0	−43
Unclassified	4.8	401.4	−19

*Includes private bridges

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

NEW CAPITAL FOR CONSTRUCTION

	Week of Dec. 4 millions	Cum. 49 wks 1958 millions	Chge '57-'58 %
Corporate Securities	$146.2	$4,911.9	−12
State and Municipal:			
All Except Housing	63.2	5,862.7	+10
Housing	0.5	118.0	−24
Federal Loans	3.6	191.2	+3
Federal Aid	...	2,596.2	+20
Total Nonfederal	$213.6	$13,680.0	+2
Federal Appropriations:			
Projects in U. S.	...	$3,946.1	+42
Outside U. S.	...	35.2	+21
Total New Capital	$213.6	$17,661.2	+9

CONTRACTS AWARDED

	Nov. 1958 (millions)	11-Mos. 1958 (millions)	% Change from 1957 Nov.	% Change from 1957 11-Mos.
Total U. S., ENR reported	$1,111.8	$17,812.8	−10	−5
Private	430.3	7,167.9	−24	−10
Public	681.5	10,644.9	+0.7	+18
State and Municipal	575.6	7,971.0	+3	+15
Federal	105.9	2,673.9	−1	+25
ENR Volume Index, 1913=100	384	537	−16	+1

NEW CAPITAL FOR CONSTRUCTION

Total U. S.	$780.4	$17,447.7	−14	+8
State and Municipal Bond Sales	438.0	5,916.9	−13	+9
Corporate Security Sales	324.2	4,765.7	−19	−14
Federal Loans, Aid (nonfederal work)	18.3	2,783.8	+166	+19
Federal Appropriations (federal work)	0	3,981.2	....	+42

* Includes funds for outside U. S.

MATERIALS SHIPMENTS

	Unit	Aug. (Ag) Sept. (S) Oct. (O) 1958	Cum. (No. of Mos.) 1958	Percent Change from Year ago Mo.	Cum.
Portland Cement, Bur Mines	thous bbls	36,615(O)	265,897(10)	+19	+5
Concrete Paving Awards, PCA	thous sq yd	7,905(O)	102,491(10)	+19	+31
Fabricated Structural Steel	thous tons	307(O)	3,127(10)	−20	−11
Bookings, AISC	thous tons	259(O)	2,334(10)	+43	−14
Reinforcing Bars, Net AISI	thous tons	184(O)	1,741(10)	+13	−15
Lumber, NLMA	mil fbm	3,242(O)	27,990(10)	+6	−2
Orders	mil fbm	2,987(O)	27,822(10)	+0.2	−3
Production	mil fbm	3,241(O)	27,480(10)	+8	−3
Clay Products, Bureau of Census					
Brick, Unglazed, Common, Face	mil bri	634.8(Ag)	4,091.1(8)	+0.1	+0.8
Vitrified Clay Sewer Pipe	thous tons	182.3(Ag)	1,109.7(8)	+8	−1
Structural Tile, Unglazed	thous tons	57.3(Ag)	374.2(8)	+12	−8
Asphalt Products, Bureau of Census					
Asphalt Roofing	thous sales sqs	6,079.4(S)	46,010.7(9)	+11	+12
Asphalt Siding	thous sales sqs	113.9(S)	752.3(9)	+0.5	−3
Aluminum, Wrought, Net, Bur Census					
Sheet and Plate (non-heat treatable)	mil lbs	84.1(S)	713.9(9)	+11	−3
Wire and Cable	mil lbs	23.3(S)	202.5(9)	+4	−5
Extruded Shapes (soft alloys)	mil lbs	65.3(S)	494.3(9)	+20	+2

EMPLOYMENT AND FAILURES

Contract Const Employment, BLS	thous	2,887(O)	2,650(10)**	−2	−6
Contractor Failures, Dun & Bradstreet					
Number		176(O)	1,810(10)	0	+4
Liabilities	thous	$6,771(O)	$95,574(10)	−15	+5

** Average per month

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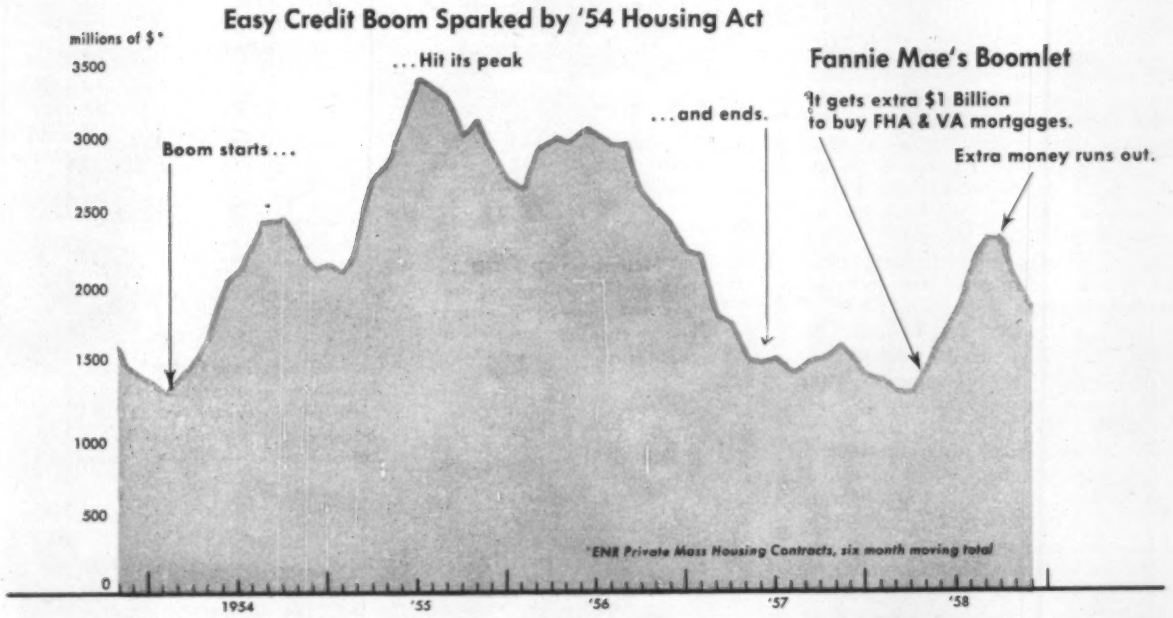
Mass Housing: Congressional Aid Helps for Awhile...



. . . But Interest Lids Stem Growth

James H. Webber
Staff Economist
and
Robert J. Stinson
Associate Editor

The private housing market is in trouble.

It's apparently headed for even darker days in the next six months. Continuation of present federal policies, shaped by Congress in many respects, can complicate the problem by stemming growth of the housing market.

The poor six months ahead can be indicated by ENR mass housing contract awards. They slumped instead of showing the traditional fall upturn. The slide started in September and is continuing. In the last 14 weeks, ENR private mass housing contracts averaged only $55.2 million a week. Here's how this rate compares with the rate in corresponding periods of past years:

- Down 13% from 1957.
- Down 31% from 1956.
- Down 52% from 1955, a peak rate.

Here's a short-term comparison: The current rate of awards is only slightly better than the low volume during the first three months of this year. That's when the homebuilding industry cried loudly for help.

However, for the 49 weeks to date this year, total housing contracts are 21% ahead of last year's low volume. That was the lowest volume since the high downpayment period of Regulation "X" in 1952 during the Korean war.

Despite the gain over 1957, volume this year is well below the years 1954 through 1956. As of last week, the current year's housing contract total is $3,514 million—a 40% drop from the peak in 1955.

• **Fannie Mae's boomlet**—ENR's figures spotlight the effects of federal government and Congressional action on the housing market.

ENR private mass housing awards represented 36% of the total spending on all new dwelling unit construction from July 1955 to June 1958, as estimated by the Departments of Commerce and Labor.

(This comparision assumes a six-month average lead time from date of contract award to the date a project is nearly completed.)

During the same three-year period, new housing starts backed by the Federal Housing Administration and the Veterans Administration accounted for 37% of total private starts, as estimated by the Bureau of Labor Statistics.

During the spring and summer, before the current slump in mass housing, contractors and developers enjoyed a flurry of new business.

The flurry resulted from the shot in the arm administered by Congress—$1 billion was granted to the Federal National Mortgage Association (Fannie Mae).

This money was to be used to buy at par all mortgages on new housing backed by FHA and VA. There was one stipulation: Mortgages purchased be $13,500 or less.

Results of this action are clearly shown in the chart above.

The mass housing trend picked up in April, when Fannie Mae started committing the $1 billion.

Mass builders moved rapidly to take advantage of what looked like a rising market.

But the boom turned out to be a "boomlet." The at-par buying ended in August. So the contract award trend dove as quickly as it had risen.

From a weekly award rate of $96 million in the April-August "boomlet," awards plunged to the $55.2 million average of the last 14 weeks. This is a drop of 42% in the awards rate—most of it in September.

(Continued on page 112)

. . . How interest ceilings on VA, FHA mortgages hurt housing market

• **Interest ceilings hurt**—The shot-in-arm approach is only one reason for the slump.

The other major reason is the interest ceiling on VA and FHA mortgages. This operates over the long-term period and stunts the growth of the housing market.

Mass housing is sensitive to changes in interest rates as the chart here illustrates. The ceiling imposed on government-backed mortgages limits their ability to compete with other long-term securities for the investor's dollar.

This must affect mass housing. Because big builders need a mass market. This market depends largely on the number of buyers who can get easy mortgage credit.

The mass market needs the help of small down payments and a repayment period stretched over 25 or 30 years. These are the advantages offered by FHA and VA mortgages.

Under FHA, a buyer needs only $650 as a down payment on a $15,000 house. A veteran needs only $300 for a down payment on the same house. But these advantages collide with another government regulation—the lid on the interest rate on these mortgages.

Maximum interest rate on FHA mortgages is 5.25%. On VA mortgages it's 4.75%. While interest rates on other long-term debts rise, the FHA-VA rates must remain the same.

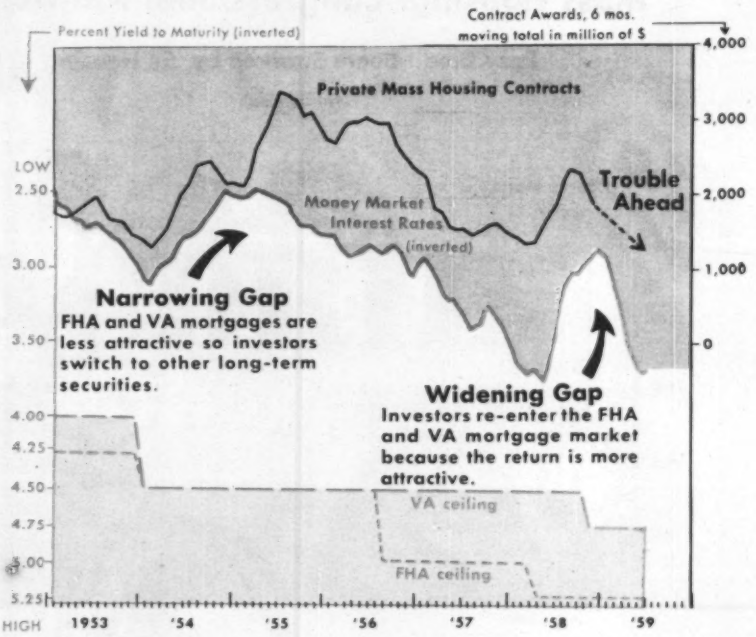
And even though the VA-FHA interest rate is fixed, lenders do obtain a higher yield by discounting the mortgage. For example, if an FHA mortgage is discounted three points, the borrower receives only $97 for each $100 borrowed. If he needs $10,000 to buy the house, he actually receives only $9,700. But he pays interest on the full $10,000 and repays $10,000.

A builder must plan ahead. He obtains advance commitments (agreements) from a lender to loan money to his customers. If the money market is tight, the discounts may be large enough to discourage the builder's planning. Or, the lenders may be unwilling to commit themselves to FHA-VA mortgages if they feel interest rates generally will head higher and bring a better return.

The chart above shows how government action affects the market. A 1953 Federal Reserve Board policy switch, sharp drops in interest rates and the Housing Act of 1954 combined to spark the 1954-55 housing boom.

Late in 1954 interest rates stopped declining because the demand for credit outran supply. Also, the industrial expansion boom of 1955-57 brought a huge demand for investors' funds.

When interest rates started to climb, the gap between the general market rate and the FHA-VA ceilings narrowed. Investors then placed larger amounts of money in more attractive industrial bonds, and less in home mortgages. Mass housing contracts dropped as mortgage funds became harder to obtain.



About the Chart

Contract trends shift about seven months after changes in long-term interest rates. The mass housing contracts are shown here as a six months moving total. Interest rates are those of U.S. Treasury long-term bonds reported by Standard & Poor's.

Interest rate is inverted. The higher the line, the lower the interest rate. This shows how mass housing contracts drop as the gap narrows between long-term interest rate and VA-FHA ceilings. These mortgages are then relatively less attractive to investors. But housing contracts rise when interest rate gap widens.

The chart also shows that as general interest rates dropped, the gap between them and the VA-FHA interest ceiling widened. The housing contract line climbs sharply as the gap widens.

The 1954-55 housing boom faded until awards hit bottom in the first quarter of 1958. This low was less than one-half the record volume during the first half of 1955.

Then the 1958 Fannie Mae boomlet started. It got an added push from declines of earlier interest rates from their 1957 highs.

The interest rate trend indicates mass housing awards in the first six months of next year may only be about $1,550 million or a weekly average rate of $60 million. This is about the same as the first half of 1957 and almost 20% below 1958's first half total reported by ENR.

There is a bright spot in the 1959 housing outlook, however. The climb in interest rates has halted. Rates show signs of turning down.

This indicates the current downtrend in housing will go no further than next June. Then it will be reversed.

And should Congress free FHA-VA rates next year, 1959 would show a gain over this year and at the same time allow the housing market to attain the growth rate required to meet the demand for new housing.

(*B&F continued on page 114*)

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Utility Reimbursement Fights Loom

State legislatures will get bills to allow relocation payments; existing laws are questioned

Reimbursing utility companies for relocating their facilities from interstate highway rights-of-way is a lively issue in some states.

The arguments for and against such payments will become louder and more widespread next year, when all but three state legislatures convene.

Meanwhile, the debate is bouncing along in the courts.

• Tennessee's high court ruled unconstitutional the state's legislation calling for utility reimbursement. But it granted a petition for a rehearing, and new arguments before the court started last week.

• New Mexico's Supreme Court recently declared the state's reimbursement legislation unconstitutional.

Tennessee's court ruled that a section of the state constitution "expressly prohibits the state's credit to, and in aid, not only of persons, corporations, but municipalities as well."

It said the law calling for reimbursing utilities that remove facilities for highway improvement, "is primarily for the benefit of subscribers of utilities or their stockholders. It is neither a state nor a public purpose."

In New Mexico, the highway commission said a phrase in the reimbursement bill is "repugnant" to a section of the state constitution. The phrase referred to "forbids donations in aid to private corporations or individuals" by the state.

The unanimous decision, written by Justice W. Morris Shillinglaw, Jr., supports this view. It says the legislature has the "power to be equitable . . . we may admit, but that power is restricted by the constitution. Otherwise the prohibition against a donation would have no meaning or effect."

The Supreme Court's ruling reverses a decision of the Sante Fe District Court. The lower court was instructed to declare that the State Highway Commission is under no obligation to reimburse Southern Union Gas Co. for removal expenses. This company was one of three utilities that were involved in the test.

The same ruling also reverses lower court decisions in other suits on the same subject. These include a second action involving Southern Union Gas and others involving Mountain States Telephone and Telegraph Co. and Ruiduso Telephone Co.

Despite the decision, communities are hopeful that they will be reimbursed for relocation of utilities they own. The court says, "Since this question is not in issue . . . we deem it unnecessary to pass upon it."

Maurice Sanchez, chairman of the Albuquerque City Commission, points out that the decision applies only to privately owned facilities. He says the Supreme Court had indicated a decision would be different where municipalities are concerned.

Mr. Sanchez apparently referred to that part of the opinion stating the gas company "is not a subordinate governmental agency nor is it fulfilling a governmental function."

When the legislature enacted the reimbursement statute in 1957, Lawrence D. Wilson, chief highway engineer, estimated utility relocation would cost about $9 million. This figure recently was revised to $11 million.

• **Legislative action coming**—Next year, legislation calling for reimbursement to public utilities will be introduced in many states. In many cases, it will be seen in the legislative hoppers for the second time.

Since passage of the Federal-Aid Interstate Highway Act in 1956, such bills have been introduced in 40 legislatures. The bills became law in 16 states. They are: Delaware, Florida, Illinois, Maine, Minnesota, Nebraska, North Dakota, Oklahoma, Texas, Virginia, Idaho, Massachusetts, Montana, Utah, New Mexico and Tennessee.

Bills were vetoed in six states: Colorado, Kansas, New York, Pennsylvania, Rhode Island and Wyoming. In 18 other states, the bills died or were killed.

Five states have paid relocation costs for some time. They are: California, Connecticut, New Jersey, Vermont and Wisconsin. Two of these, Connecticut and Vermont, amended existing laws in 1957 to include reimbursement for utility relocation on the interstate system.

• **Hurdles erected**—The legislation, however, has also encountered difficulties in states other than New Mexico and Tennessee.

Litigation was started in Idaho, Minnesota, Montana, North Dakota and Texas.

The lower courts in Idaho and Texas rendered decisions favorable to the utility companies, but these decisions are being appealed by the highway departments of those states.

In Minnesota, the Supreme Court declared the reimbursement legislation constitutional. In Montana and North Dakota, the cases are still pending before lower courts.

In the State of Washington, legislation was introduced in 1957 but died without any action taken. The measure will reappear next year.

The utility companies are expected to submit their own bill. This type of measure had been considered by the legislature's interim Joint Fact-Finding Committee on Highways. The full committee, however, failed to act on proposing the measure and only a report of the problem will be given to the legislature.

According to C. K. Glaze, highway planning engineer, relocation costs will run from a minimum of $10 million to as much as $20 million. The fact-finding committee estimate is $15 million to $18 million. Approximately half of the latter estimates cover relocation costs within municipalities, where existing legislation allows the state to reimburse municipally owned utilities.

Caterpillar Boosts Prices 3% to 5% on Some Lines

Caterpillar Tractor Co. raised prices 3% to 5% last week on certain models in its earthmoving equipment line.

F.O.B. plant prices are up 5% on the D-9 and D-6 crawler tractors, the No. 977 tractor shovel and the No. 12 grader. The D-7 and D-4 crawler tractors are up 3%.

Prices of tractor scrapers are unchanged.

Price increases came on the heels of a new labor contract calling for a wage increase for production workers. The agreement ended a prolonged strike (see p. 117).

Caterpillar's move leaves Allis-Chalmers and LeTourneau-Westinghouse as the only major tractor and scraper manufacturers who have not boosted prices (ENR Oct. 30, p. 76). A-C reportedly will announce a price change soon.

Most of the other boosts came in October. They included International Harvester, Euclid Division of General Motors Corp. and Bucyrus-Erie. Hikes were attributed to higher steel and labor costs.

Loan Plan Is Legal

Maine court upholds move to attract new industry

Maine can again lay out its financial welcome mat for industrial construction. The State's Supreme Court has upheld the constitutionality of loans guaranteed by the Maine Industrial Building Authority.

The court ruled there is no conflict between the act creating MIBA and a constitutional amendment allowing the state to guarantee industrial mortgage loans.

The constitution limits such guarantees to industrial real estate. The MIBA act limits them to property held by local development corporations. The court interpreted "industrial real estate" to mean real estate used by an industrial firm, but not necessarily owned by it.

It indicated that state-guaranteed loans cannot be granted for just any building suitable to industry. A client must be found who is ready to lease a proposed plant, before the construction loan may be granted, the court said.

The 1957 amendment authorized a loan of the state's credit to bonds up to $20 million for a mortgage insurance program. The insurance applies only to new industrial structures built by local development corporations. Under the plan, the non-profit corporations build the plants and lease them to private industry on a straight lease or lease-purchase agreement.

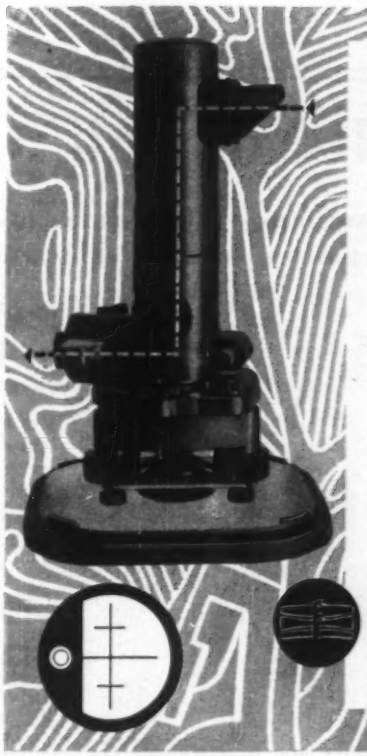
The state legislature created the MIBA to implement the program. MIBA is empowered to insure bank loans up to 90% of a building's cost of $1 million, whichever is lower. The agency normally insures only the monthly payments on the insured mortgage. In case of default, however, it can liquidate the mortgage and take title.

Bank lawyers were concerned over validity of the MIBA act. To test it, a "friendly" suit was brought against the Maine Savings Bank by one of its depositors (ENR Sept. 18, p. 181).

Texan and Alaskan Form Anchorage Building Firm

Michael T. Halbouty, Houston petroleum engineer, has joined forces with a contractor doing business in Alaska.

The Alaskan is Walter J. Hickel of Anchorage, a contractor and real-estate developer. The two men have formed the Hickel-Halbouty Investment Co., which will construct and operate commercial properties in Anchorage.



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Curbing 'Do-It-Yourself' Construction

Contractor spokesman suggests a labor-management board to control restrictions on outside contractors

More imagination than contractors and building trades unions have as yet shown is necessary if "do-it-yourself" construction work in industrial plants is to be curbed.

Existing laws offer little help in solving the problem. Voluntary formation of another labor-management board similar to the construction industry's National Board for the Settlement of Jurisdictional Disputes is perhaps the only feasible solution.

These conclusions were reached by George P. Lamb, counsel to the National Association of Plumbing Contractors, after studying the legality of industrial labor contract clauses limiting the right of management to use outside contractors for in-plant construction work. The study was conducted for the benefit of NAPC members.

• **The problem**—The report indicates increasing concern on the part of contractors over a problem that has troubled the AFL-CIO building trades unions and the AFL-CIO for a long time (ENR Nov. 28, 1957, p. 87).

Stated in its simplest form, the problem is the loss of potential work suffered by contractors and construction workers whenever a plant decides to use its own workers on maintenance or construction jobs instead of giving the work to outside contractors.

Industrial unions are accused of promoting a trend away from construction by contract by persuading their employers to keep plant construction work within the plant's family. This has produced a serious jurisdictional conflict between craft and industrial unions and has created the major stumbling block to AFL-CIO achievement of labor unity.

• **Union restriction**—One form of persuasion used by industrial unions, such as the United Auto and the Oil Workers Unions, has occurred at the collective bargaining table. This has resulted in various forms of labor contract clauses inhibiting construction by contract. Typical clauses cited in the NAPC study appear in the accompanying box.

Most common type of clause, Mr. Lamb says, is one that goes "no further than to require a company to make the best use of its own employees before giving a job to an outside contractor." These clauses give plant workers job or wage protection.

In the eyes of the AFL-CIO building trades unions, these clauses invade their jurisdiction, rob them of job opportunities and threaten their wage scales and working conditions. The end of the craft-industrial union feud within the AFL-CIO is not yet in sight.

Mr. Lamb has now taken a look at these restrictive clauses from the contractors' point of view. Recognizing that the clauses deprive contractors of employment, he asks this question: Can they be killed under the anti-trust laws or the Taft-Hartley Act?

• **Law is important**—The answer, according to Mr. Lamb, is "No."

He thinks the restrictive clauses, however distasteful they may be to contractors and building trades unions, are designed to protect the work opportunities of plant workers. Because they protect "a legitimate employee interest," they fall within one of the anti-trust exemptions granted labor by the Clayton and Norris-LaGuardia Acts.

Another difficult hurdle is the necessity of proving that the restrictive activity of an industrial union in any given case "unreasonably" restrains trade.

The situation under the Taft-Hartley Act is no more promising, Mr. Lamb says.

Two sections of the law might apply: One makes a jurisdictional strike an unfair labor practice; the other allows one injured by such a strike to sue for damages.

The jurisdictional disputes ban, as most contractors know, does not apply if the employer is legally obligated to assign the work to the striking union.

Mr. Lamb concludes that an industrial union having a no-contracting-out clause in its labor contract could strike with impunity if the employer violated the clause by giving work to an outside contractor. The fact that the disputed work has "traditionally or customarily been performed" by an outside craft union, Mr. Lamb says, would be immaterial.

Conversely, a strike by an outside

Sample Restrictions on Contracting-Out

► "The company and union agree that the following policy shall prevail in the placement of work with outside contractors: It is anticipated that in the great majority of instances, it will be to the company's advantage to use its own equipment and personnel. The management intends to utilize this personnel and equipment wherever feasible.

"Where outside contractors are utilized, notification to that effect and the reasons therefore will be furnished the union. If the union is not satisfied with the reasons given, the matter may be processed through the grievance procedure."

► "The company will not employ outside contractors for work which will result in the discharge or laying off of employees covered by this agreement who ordinarily and customarily do such work."

► "It is the policy of the company to fully utilize its seniority employees in the skilled trades . . . in the performance of maintenance and construction work . . ."

► "The company agrees that during the life of this agreement it will not contract out work as a means to evade the terms of this agreement. . . . The company will restrict all contract work to a forty (40) hours per week straight time basis and will not permit any overtime on contract work except in cases of emergency. . . ."

► "Whenever a contractor or subcontractor performs work on company premises which would ordinarily be performed by employees covered by this agreement . . . the company will require such contractors to file schedules of rates of pay with the company . . . and will mail monthly a list of such contractors to the nearest local union."

craft union to get the work away from the industrial union would be an unfair labor practice and unlawful.

• **NLRB no help**—Even if a contractor or craft union could get a dispute of this kind before the National Labor Relations Board, little would be accomplished, according to Mr. Lamb.

Contractors would run up against the same stone wall they encounter in craft jurisdictional disputes because of the board's reluctance to make affirmative work assignments (ENR Dec. 4, p. 107). They would be unable to get the dispute to the National Joint Board for a decision on the merits of the dispute and the NLRB, following its past practice, would not award the work to either union. The basic dispute would remain unsettled.

• **Voluntary approach**—Mr. Lamb suggests a new voluntary form of settlement procedure similar in nature to the National Joint Board as a way out of the dilemma. This, however, would be effective only to the extent industrial employers and unions, as well as contractors and craft unions, agreed to adhere to it.

The suggestion has two merits:

• The suggested machinery would be a "voluntary method of settlement" recognized by the Taft-Hartley Act.

• It would afford a forum for final settlement of craft-industrial union jurisdictional disputes.

It would also provide the AFL-CIO an escape from its own dilemma in solving the inter-union conflict. The federation did come up with a settlement plan early this year but it has not been able to make it work.

• **Scope of problems**—The general problem is admittedly serious but it is difficult to tell how widespread it actually is.

The University of Illinois recently concluded a study of contracting-out clauses. It surveyed 74 industrial firms. Only a third of the firms had such clauses in their labor contracts.

Bulk of the firms, according to the survey, contract out all their major construction work. A smaller percentage contract out all their minor construction and some of their maintenance work. Plumbing and electrical work are contracted out less often than other types of work.

The frequency with which outside contractors are used, according to the survey, has changed little in the last five years. But industrial firms are reportedly uneasy about the future.

The AFL-CIO building trades unions, however, claim the seriousness of the problem has increased since the AFL-CIO merger. Building Trades President Richard Gray recently said "well over a hundred" unsolved disputes over industrial construction work are pending before the AFL-CIO.

Grave concern over the problem has also been expressed by the Associated General Contractors of America, Inc.

At its annual convention last year, the association went on record as opposing "the demands of industrial unions for agreements which restrict the freedom of industrial owners to perform their construction by contract."

Two months ago, the AGC's Labor Committee issued this warning: "The growing power and aggression of industrial unions and their leaders poses a serious threat to the construction industry. They and their industry employers consider the construction industry and the skilled craftsmen in the building trades unions to be little less than a service industry to take care of their needs when and if they decide they do not want to do the work themselves."

Right-to-Work: Trouble, Change

Repercussions of the November voting on right-to-work laws are already evident in Kansas and California.

John Anderson, attorney general of Kansas, has ruled that union security clauses in existing contracts between labor and management are invalid under the Kansas right-to-work amendment adopted November 4.

His opinion, submitted to the State Labor Commissioner, is contrary to one received by the State Federation of Labor, AFL-CIO, from its counsel. The latter contends that "contracts negotiated prior to the election . . . are legally secure and valid until they expire."

Both men agree the amendment became effective upon its ratification by the voters. Kansas was the only state to adopt such a measure this year.

L. E. Weiss, president of Kansas for the Right-to-Work, Inc., which pushed for adoption of the amendment, says, "There will undoubtedly be challenges to immediate enforcement of the Kansas amendment, and we will be in court to defend it when they occur."

Kansas officials, however, cannot enforce the amendment against existing contracts. Mr. Anderson says state officers have no authority to act because the "question concerns rights of private parties."

In California, meanwhile, Tehama County supervisors have voted to repeal the county's right-to-work ordinance adopted 18 months ago.

The action was taken in view of the November rejection by county voters of a statewide right-to-work proposal.

Equipment Agreements in Sight

The United Auto Workers last week ended a seven-week strike at two Caterpillar Tractor Co. plants. Members approved a new, three-year contract.

And the union moved closer to a settlement with International Harvester Co., which it has been striking since November 13.

The Caterpillar settlement is the second one to be concluded in the farm equipment and construction machinery industry. It covers 12,000 workers in the East Peoria and Morton, Ill., plants.

Workers will receive immediate general wage increases of 8 to 17 cents an hour under the new contract. And they will get additional increases of 6 cents in 1959 and 7 cents in 1960.

Various vacation, pension and supplemental unemployment benefit provisions have been liberalized and workers are given additional protection against short workweeks.

Wage scales of workers under the old contract ranged from $2.04½ to $3.16½ an hour.

The contract proposal for Harvester plants follows the three-year pattern set by the John Deere & Co. settlement concluded last month. It calls for annual wage increases of about 6 cents an hour.

Unlike the Caterpillar situation, the Harvester negotiations were aimed at a company-wide contract covering 36,500 workers in 15 plants.

UAW had sought this initially in the Caterpillar talks, but finally negotiated on a plant-by-plant basis. However, Caterpillar did agree to a tie-in of certain non-wage provisions between some of its plants.

In addition to the contract stalemates that exist at Caterpillar's Decatur and York plants, negotiations are still under way at Allis-Chalmers Manufacturing Co. and Oliver Corp.

(*Labor continued on page 118*)

New Calls for State Legislation

Local groups will try to fill some gaps left by Congress and to tighten or liberalize existing laws

Labor and management are once again falling back on some political advice that has paid dividends in the past: "If you can't get what you want from Congress, try the state legislatures."

Preparations now under way for the introduction of labor legislation at the state level are beginning to reflect last year's failures at the federal level.

Here's what the two groups are after:

• Employer groups in some areas are talking about tighter state curbs on secondary boycotts, featherbedding, union corruption and jurisdictional strikes.

• Labor is seeking corruption curbs and bigger benefits under state unemployment, workmen's compensation, minimum wage and tax laws.

In the background are the problems of federal preemption of the right to legislate on labor matters in interstate commerce and of the resulting jurisdictional "no-man's land" in labor relations.

Present plans to seek at least a partial solution to some of the problems at the state level include these:

• **Alabama**—The Alabama Labor Council (AFL-CIO) proposes a jobless pay amendment boosting maximum unemployment compensation benefits from $28 to $35 a week.

• **Colorado**—The state AFL-CIO plans to submit a "little Kennedy-Ives" bill to protect union finances, strengthen democratic procedures in union affairs, curb conflicts of interest in labor matters and restrict the operations of "intermediaries" in labor disputes.

• **Ohio**—The Ohio AFL-CIO is calling for jobless benefits equal to 75% of average weekly pay, payable for 39 instead of 26 weeks. It also wants immediate exclusion of supplemental unemployment benefits in computing the amount of jobless benefits a worker is entitled to.

• **Nebraska**—A state legislative council is recommending that secondary boycotts be outlawed in intrastate commerce. It says they are being used to put employers out of business and to force workers into unions not of their choice.

• **Maryland**—The Maryland State-District of Columbia AFL-CIO is seeking a minimum wage of at least $1.00, a permanent extension of jobless pay benefits from 26 to 39 weeks, and income tax changes easing the tax burden on low-income earners.

• **Iowa**—Gov. Herschel Loveless will recommend a change in the state's right-to-work law to permit negotiation of a union shop clause in labor contracts. He says the present restriction is an "infringement of the freedom to contract" and promotes "free-loading." This, he says, makes a few pay for the benefits received by many.

• **New York**—The State Chamber of Commerce is seeking a major overhaul of the state's "Little Wagner Act." It would restrict secondary boycotts, prohibit featherbedding, bar jurisdictional strikes, curb recognition picketing, liberalize the right to enjoin union activity and establish machinery for processing disputes the National Labor Relations Board refuses to hear.

On another front, New York's Industrial Commissioner, Isador Lubin, recommends tying workmen's compensation, jobless pay and disability benefits to wage levels through an escalator clause, extending jobless pay to 39 weeks and appointing a commission to study the state's workmen's compensation, unemployment insurance and disability programs.

• **Tennessee**—The Tennessee State Legislative Council is calling for legislation to control violence in labor disputes. It suggests the governor be empowered to take protective action when the need arises.

Plumbers Seek Rehearing On Peurifoy Tax Case

The plumbers union has asked the U. S. Supreme Court to reconsider its recent decision limiting the right of construction workers to deduct, for federal income tax purposes, travel and living expenses on jobs away from home.

The decision is known as the Peurifoy case (ENR Nov. 20, p. 112).

Martin O'Donoghue, plumbers' counsel, said the petition for a rehearing is "a long shot chance." He indicated the only effective way to clarify the problem is by an amendment to the tax law.

Lead Burners Establish New Training Standards

The lead burners union is setting up its first formal apprenticeship program. It is designed to train replacements for men lost through death, disability and retirement.

Lead burners, who form one of the trades in the plumbers union, fabricate and install "leaded" items such as tanks and pipes. They are particularly active in the chemical and atomic energy industries. There are eight locals in the United States.

All the locals will follow the new national apprenticeship standards of the National Joint Lead Burner Apprenticeship Committee. The standards are registered with the U. S. Labor Department's Bureau of Apprenticeship and Training. They are expected to guarantee the trainees an uninterrupted five-year program despite the transient nature of their work.

The training program includes about 720 non-paid hours of classroom instruction. It will be financed by employers, who, under a uniform collective bargaining agreement, will pay into local trust funds 1 cent for each man-hour worked by the 850 journeymen and 125 apprentices now in the trade. The funds will be administered by local employer-union joint apprenticeship committees.

The training program was set up by the employers' National Lead Burning Association, the Joint Council of Lead Burners Local Unions and the United Association of Plumbers and Pipefitters (AFL-CIO) in cooperation with the Federal Bureau of Apprenticeship and Training.

Ohio Labor Groups Lose Dual Jobless Pay Suit

The Ohio Supreme Court has ruled that unemployed workers cannot draw supplemental unemployment benefits under privately established plans without defeating their right to state jobless benefits.

With two members dissenting, the court said that jobless payments received under union-negotiated plans are earned income within the meaning of the state unemployment compensation law.

The dissenting members argued that money one receives while unemployed cannot be "remuneration for personal services."

Ohio is one of the few states that does not permit simultaneous receipt of SUB and state jobless benefits. Virginia, Indiana and North Carolina have taken the Ohio position.

Mechanic's Lien

Court holds lien valid even though materials not used in buildings

One who supplies materials to a developer may have an enforceable lien against buildings completed by the developer even though none of the materials were used in the buildings to which the lien attaches. The fact that the lien was filed after the houses were sold may be immaterial.

This was the ruling in an unusual case that arose in Maryland under the following circumstances:

Brooks Homes, Inc. acquired a tract of land for development purposes and proceeded to erect houses in groups of six or seven. Construction work began in January, 1951 and continued until a receiver was appointed for Brook Homes, Inc. on August 28, 1953. Two model houses were completed by June 16, 1952 and were sold on June 16, 1953.

On August 5, 1953, Clark Certified Concrete Co. filed a mechanic's lien on the two houses that were sold for ready mixed concrete supplied to the developer between August 1, 1952 and April 8, 1953. None of the concrete went into the houses that were sold. An action was brought to foreclose the lien but was dismissed by the trial court. The judgment was reversed by the appellate court.[1]

Under Maryland's Mechanic's Lien Law, a lien must be filed within six months after the materials are furnished. The contract in question provided for the delivery of the concrete as ordered and since the last delivery of concrete was on April 8, 1953 and the lien was filed on August 5, 1953, the same had been filed within six months from the time that the last material was furnished.

The court, in discussing the claim that no lien could attach because none of the concrete was used in the two houses that were sold, stated: "It is generally held that delivery of material to the site of building operations is enough to establish a lien, even though none of the materials are actually incorporated into the building, but the cases are not in accord as to whether such proof is conclusive, or merely establishes a rebuttable presumption. See note in 39 A.L.R. 2d 394. That the fact of incorporation is immaterial was flatly stated in Greenway v. Turner, 4 Md. 296 and Watts v. Whittington, 48 Md. 353, although the statement was unnecessary for the decisions in those cases. In Wilson v. Wilson, 51 Md. 159, while the court found there was a failure to prove the use of materials in one of the four houses sought to be charged, the holding was that the lien failed because of a release by the claimant, which had the effect of releasing all of the houses from the lien. In Maryland Brick Co. v. Spilman, 76 Md. 337, 25 A 297, 17 L.R.A. 599, it was held that where there was an entire contract to deliver bricks for the construction of 47 houses, it was not incumbent upon the claimant to show that the bricks were actually used in the construction of the particular buildings against which the lien was filed. The statement in the Greenway and Watts cases, supra, was quoted with approval. The Wilson and Nickel cases were distinguished as dealing with the effect of a release. But it is not entirely clear from this decision whether the court meant that the owner would be precluded from showing that none of the materials went into the particular buildings. The court observed that it would be 'unreasonable to require the person who furnishes materials * * * to ascertain how much of the material is placed in each house * * *.'

"In Humphrey v. Harrison Bros., 196 F. 2d 630 at page 633, the facts were that a lien claim was based upon an agreement to furnish plumbing and heating supplies for 135 houses, at a flat rate per house. It was shown that payment had been made for substantially all of the materials installed in the 29 houses against which the lien was filed. Judge Soper, for the Court, applying the Maryland law, sustained the lien, and said that it was 'not essential to the validity of the lien claim that the furnisher show in what houses specific materials were used, or indeed that the materials were actually used upon the project if they were purchased for and delivered to the site.'"

(1) Clark Certified Concrete Co. v. Lindberg, 141 A. 2d 685, Court of Appeals of Maryland, May 19, 1958.

Note: This is a very unusual case.

These summaries of court decisions are prepared by I. Vernon Werbin, Esq., New York attorney and licensed professional engineer, who is author of the following books published by McGraw-Hill Book Company, Inc.: *Legal Phases of Construction Contracts; Legal Guide for Contractors, Architects and Engineers; and Legal Cases for Contractors, Architects and Engineers.*

OFFICIAL PROPOSALS

Bids: Jan. 15, 1959

Town of Wallingford
Connecticut

Sealed proposals for construction of Sewage Works will be received by the Town of Wallingford Sewer Authority at its offices in the Town Hall, Wallingford, Connecticut, until 3:00 P.M. Eastern Standard Time, on January 15, 1959, after which time they will be publicly opened and read aloud. No bids will be accepted after said hour. Proposals will be received on the following contracts:

Sewage Treatment Plant and Pumping Station—Contract 2
Industrial Drain and Relief Sewer—Contract 3

Information for Bidders, Proposal forms, Specimen Contract, Plans, Specifications and copies or specimens of all pertinent documents may be examined at the offices of Bowe, Albertson & Associates, Engineers, 75 West Street, New York, New York, and at the offices of the Town of Wallingford Sewer Authority, Town Hall, Wallingford, Connecticut, between the hours of 10 A.M. and 4 P.M. daily except Saturdays, Sundays and holidays.

Copies of the plans and specifications may be obtained from the offices of the Authority and from the offices of the Engineers, upon making a deposit of Twenty-five ($25.00) dollars, which will be refunded to bidders only who apply for a refund within thirty (30) days after the date proposals are opened and who return the plans in good condition.

Extra copies of plans and specifications may be obtained at the cost of Ten ($10.00) dollars each, which will not be refunded. Extra sheets of plans may be obtained at the cost of One ($1.00) dollar each, which will not be refunded.

A certified check or cashier's check made payable to the order of the Town of Wallingford Sewer Authority or a duly executed bid bond, in the amount of 5% of each bid must be deposited by the bidder with his bid as a guarantee that, in case a contract is awarded to him, he will execute such contract and furnish a satisfactory Performance and Labor and Material Bond. Acceptance of the bid will be contingent upon fulfillment of this requirement by the bidder and on failure to do so, he shall forfeit the deposit.

The Authority reserves the right to reject any or all bids, to waive any informalities or to accept the bid or bids which in its judgment will be for the best interests of the Town of Wallingford.

TOWN OF WALLINGFORD
SEWER AUTHORITY
TOWN OF WALLINGFORD,
CONNECTICUT
By: Edward Dubiell
Chairman

BOWE, ALBERTSON & ASSOCIATES
Engineers

Bids: December 18, 1958

Maumee Bay Marina

Sealed proposals for this project will be received by the Toledo Metropolitan Park Board at the office of the County Commissioners, First Floor, Lucas County Court House, Toledo, Ohio, until 2:00 o'clock P.M., Eastern Time, on Thursday, December 18th, 1958, at which hour the bids will be publicly opened and read.

The work involves three (3) separate contracts, i.e.:

Contract No. M1—Dike Construction of approximately 3,000 feet
Contract No. M2—Dredging — 67,000 cubic yards
Contract No. M3—Construction of shore facilities, such as ramps, roads, etc.

Copies of the plans, proposal forms and other documents can be seen at the office of the Toledo Metropolitan Park Board, 4th Floor, Lucas County Court House, Toledo, Ohio, and can be obtained at that office upon deposit of $10.00.

J. Max Shepherst,
Director-Secretary.

(Continued on the following page)

OFFICIAL PROPOSALS

Bids: December 30, 1958

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS.

ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on the 30th day of December 1958, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following Projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, G. L. NICKERSON, District Engineer, 353 Broadway, Albany 1, New York						
Greene (Rte. 385)	FARC 58-167	Catskill-Athens, S. H. 5367 Proj. F-365(8)	0.67	Asphalt Concrete = 0.66 Mile Miscell. Work = 0.01 Mi. Comp. W-F Beam Bridge 125'	$21,000 Plans $5	$386,000
Saratoga & Warren (Int. Tour. Rte. 87)	FISH 58-19	Interstate Route 502 (Route 9 to North Bank of Hudson River); Glens Falls-Saratoga, Pt. 1, S.H. 58; Spiers Falls Co. Rd. 24; Spiers Falls Road-Redmond Road Connection & Butler Road Proj. I-1119(24)	2.74 (5.00 Acc.)	9" Cem. Conc. Pavt. 2 @ 24' Var. Wide = 2.69 Miles Cement Conc. Pavt. (Ramps) = 2.69 Mi. Asphalt Conc. = 1.28 Mi. Top Course Graded Gravel = 0.91 Mi; Miscell. Work = 0.17 Mi. 4 Hy. Sep. Comp. I-Beams 364.3' (5 Sp.), 135.5' (3 Sp.), 140.3' (3 Sp.) & 247' (4 Sp.) 1 Bridge Comp. Weld. Plate Girder 728' (5 Sp.)	$350,000 Plans $10	$6,369,000
Schenectady (Int. Tour. Rte. 890)	FIC 58-28	Interstate Route Connection 550 (Campbell Rd. to Crosstown Connection) Proj. I-323(15)	0.23	Demolition of Buildings	$2,000 Plans $5	$37,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage) Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPT. OF PUBLIC WORKS

Bids: January 12, 1959

Comision Ejecutiva Hidroelectrica Del Rio Lempa

Sealed Bids (Contract Documents 198-2) will be received at San Salvador, El Salvador, C. A. until 4:00 P.M., CST, January 12, 1959, for furnishing labor, materials, and equipment for Drilling and Grouting for Sealing Lake Guija, Guija Project located in the area of the Rio Desague situated in the Northwestern part of El Salvador. Principal items are 16,000 linear meters drilling grout holes; 22,000 cubic meters furnishing natural materials (sand, silt, and clay); 1,400 metric tons furnishing cement and commercial bentonite; mixing and placing the above grout materials. Completion time 600 calendar days.

The contract documents require prequalification of bidders and the following information must be submitted for prequalification: list of similar work with dates, total amount of contract and references from clients, list of equipment available for the work, and ownership of same, statement of financial resources, and banking references. All prequalification information must be sent to both the Comision Ejecutiva Hidroelectrica Del Rio Lempa, Edificio Duenas, 4° piso, San Salvador, El Salvador, Central America and Harza Engineering Company, 400 West Madison Street, Chicago 6, Illinois, U.S.A. Contract documents will automatically be issued to qualified bidders.

Bids must be submitted in triplicate in accordance with the Instructions To Bidders. A bid bond or certified check as guarantee in the amount of 60,000 Colones of El Salvador or the equivalent in US Dollars will be required with each bid.

The right is reserved to make award on any bid or to reject any or all bids.

Bids: January 6, 1959

Contract PN-560.004

THE PORT OF NEW YORK AUTHORITY
PORT NEWARK

BUILDINGS NOS. 197, 198, 261 & 262

Sealed proposals for the construction of four cargo distribution buildings at Port Newark will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, January 6, 1959, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, December 11, 1958

Bids: January 7, 1959

Invitation to Tender Negril Development Scheme

Tenders are invited from suitably qualified civil engineering contractors for the construction of the works briefly described herein—

The works are to consist of 10 miles—more or less of roadway having a carriageway of 24 ft. with an eight foot stabilized shoulder on each side of the roadway together with drainage works comprising 4.6 miles more or less of cut-off canal and improvement and bypass works to two rivers.

These works are to be undertaken under a deferred payment scheme which will be operated over a period of five years.

Tender Documents and Plans may be obtained on application to the Chief Engineer (Civil), Public Works Department, Kingston 10, Jamaica, between 9.00 a.m. on 7th November, 1958 to 12.00 noon on 7th December, 1958. Applications for Tender Documents are to be accompanied by a certified cheque for £100 which will be returnable on receipt of a bona fide tender. Completed tenders are to be addressed to the Permanent Secretary, Ministry of Development, P.O. Box 512, Kingston, Jamaica W.I. and marked "Tender for Negril Development Scheme" to reach him not later than 7th January, 1959.

Bids: January 6, 1959

Contract BP-170.003

THE PORT OF NEW YORK AUTHORITY
BROOKLYN-PORT AUTHORITY PIERS
PIER 3
PAVING, UTILITIES AND BULKHEAD

Sealed proposals for the construction of paving, utilities, a bulkhead and railroad tracks for the upland area for new Pier 3 at the Brooklyn-Port Authority Piers will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, January 6, 1959, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, December 11, 1958

Bids: December 17, 1958

Triborough Bridge and Tunnel Authority

SEALED BIDS WILL BE RECEIVED BY Triborough Bridge and Tunnel Authority at its office, Administration Building, Randall's Island, Manhattan, New York 35, N. Y., as follows:

Until 11 A.M. on Wednesday, December 17, 1958

For Throgs Neck Bridge Contract No. TN-11, Queens Interchange. The bid must be accompanied by a deposit in the amount of $80,000.00.

Plans, specifications and contract documents may be purchased at the office of the Authority for $45.00, which will not be refunded.

OFFICIAL PROPOSALS

Bids: December 23, 1958

Contract BP-130.003

THE PORT OF NEW YORK AUTHORITY
BROOKLYN-PORT AUTHORITY PIERS
DEMOLITION OF BUILDINGS IN THE VICINITY OF CONOVER AND SUMMIT STREETS AND COLUMBIA AND AMITY STREETS

Sealed proposals for the demolition of buildings in the vicinity of Conover and Summit Streets and Columbia and Amity Streets at the Brooklyn-Port Authority Piers will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, December 23, 1958, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman
New York, December 11, 1958

OFFICIAL PROPOSAL

RATE $2.40 per line (or fraction) per insertion.
CLOSING DATE: 10:30 a.m. Friday for issue out following Thursday.
SEND COPY: Official Proposal Division, Class. Adv. Div.; Engineering News-Record, P. O. Box 12, New York 36, N. Y.

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OFFICIAL PROPOSALS

Bids: January 8, 1958

Power Authority of the State of New York

ADVERTISEMENT FOR PROPOSALS
For Furnishing and Delivery of
Intake Gate Fixed Hoists for
Tuscarora Power Plant
Specifications No. PA-N-23019
Niagara Contract No. NP 32

NOTICE TO CONTRACTORS: The Power Authority of the State of New York will receive sealed proposals for the furnishing and delivery thereof f.o.b. University Siding, Tuscarora Power Plant Area, Niagara Falls, New York, of 24 intake gate fixed hoists for the Tuscarora Power Plant in Lewiston, Niagara County, New York, until 10:30 AM Eastern Standard Time on the 8th day of January, 1959, at the Authority's Office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place proposals will be publicly opened and read aloud.

Bids will be received for furnishing and delivering of twenty-four 65 ton capacity intake gate hoists complete with appurtenances for the 24 intake gates for the Tuscarora Power Plant. First delivery will be required June 1, 1960.

All work shall be completed on or before September 1, 1960.

Plans, Specifications and Proposal Forms for the work may be obtained from the Power Authority of the State of New York, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten ($10,000) Dollars per initial set of contract documents, and Five ($5.00) Dollars per set for additional sets no part of which will be refunded. Plans, Specifications and Proposals Forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

OFFICIAL PROPOSALS

U. S. Government

CIVIL AERONAUTICS ADMINISTRATION Sealed bids (Invitation No. 9-3345B1) will be received at Washington, D. C. until 2:00 P.M., E.S.T., Friday, December 19, 1958, for furnishing all labor, equipment, and materials and performing all work in connection with the development of the Washington International Airport in Fairfax and Loudoun Counties, Virginia, pertaining to the excavation and grading of Runway 11L-29R, including taxiways and all related drainage; and the paving of Runways 18L-36R, 18R-36L, and 11L-29R including taxiways, turnouts, shoulders, and related duct and other underground installations. Performance is desired within 600 calendar days from and including effective date of Notice to Proceed. Bid forms, plans, and specifications may be obtained from Procurement Division, Civil Aeronautics Administration, Room 2615, T-5 Building, Washington 25, D. C., accompanied by deposit of $25.00 for each set of plans and specifications desired. Deposits will be refunded upon return of plans in good condition not later than thirty (30) calendar days from date of bid opening.

EMPLOYMENT OPPORTUNITIES

ADDRESS BOX NO. REPLIES TO: Box No. Classified Adv. Div. of this publication. Send to office nearest you.
NEW YORK 36: P. O. BOX 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

• *POSITIONS VACANT*

Highway Engineers—Highway Engineers with a minimum of 3 years experience. Excellent opportunity with established consulting engineering firm in Middle West. P-7909, Engineering News-Record.

Assist. Prof.—To teach undergrad. courses in structures and mechanics. Salary open. Civil Eng., Univ. of No. Dak., Grand Forks.

Electronic Computer Application Engineer Wanted. Midwestern consulting Engineering firm needs graduate engineer experienced in electronic computer application to engineering problems. Reply in detail to P-9211, Engineering News-Record.

Estimator wanted by Paving and Concrete Contractor. Prefer Graduate Engineer with 5 years experience. Permanent Position. Location N.Y.C. P-9314, Engineering News-Record.

Construction—spare parts manager, heavy equipment maintenance superintendent, warehouse superintendent. Good long term positions available for top men. Overseas—temperate climate. Please send detailed resume including foreign languages known, salary desired, etc. P-9363, Engineering News-Record.

Mechanical Engineers—Experienced in design calculations, equipment selection and arrangement, process and service piping layouts for chemical plants or paper mills. Position with Consulting Engineering firm in Georgia. State education and experience. P-9360, Engineering News-Record.

Hydraulic Engineers—Experienced in hydraulic design of channels and bridges, and/or design and construction of dams, for Commonwealth of Pennsylvania, Department of Forests and Waters. Duties include review of plans and specifications, report writing, field investigations and inspections, with some travel and public relations. Salary depending on experience. Location—Harrisburg, Pennsylvania. Write State Civil Service Commission, Health and Welfare Building, Harrisburg, Pennsylvania.

POSITIONS VACANT

Mechanical Engineer for permanent position in medium sized Engineering Department. Exceptional advancement opportunities with a growth company. Prefer man with 5 to 10 years experience and with M.E. degree or equivalent. Familiar with design and construction of electrical and mechanical machines and equipment. P-9355, Engineering News-Record.

Wanted—Estimator to assemble complete general construction bids. Must be heavy on concrete and masonry. Westchester contractor. P-9369, Engineering News-Record.

Wanted: General Superintendent for permanent location with expanding construction company doing asphalt, grading and allied types of construction in a growing Southern capital city. Only the highest caliber man will be considered. Best management ability and leadership necessary. Ability to evaluate and handle varied and fast moving situations involving men and equipment required. Applicant must be capable of meeting and dealing with the public. Salary and percentage bonus. Engineering degree desirable. Send resume to P-9407, Engineering News-Record.

Estimator—At least five (5) years experience estimating institutional, commercial and industrial construction under our Chief Estimator in Ohio-Michigan area. Graduate Engineer preferred but not necessary. Salary commensurate with experience. Good opportunity for right man. P-9414, Engineering News-Record.

Project Manager wanted for large steam generating plant project in mid-west. Must have experience in entire construction operation from pile foundation to final test. Give references and experience. Salary open. P-9415, Engineering News-Record.

Reinforcing Detailer with a minimum of five years experience. Excellent starting salary and usual benefits. Opportunity for advancement. Brocker Mfg. & Supply Co., York, Pennsylvania.

Structural Steel Detailer—Established steel fabricator in southern New York has immediate opening for qualified detailer capable of supervising drafting room. Salary commensurate with experience. Medical, hospital and retirement benefits. P-9441, Engineering News-Record.

(Continued on the following page)

EMPLOYMENT NATIONAL COVERAGE OPPORTUNITIES

DISPLAYED RATE:

The advertising rate is $39.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

DECEMBER 25th ISSUE CLOSES DECEMBER 12th

UNDISPLAYED RATE:

$2.40 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take ½ of above rate.

Box numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to agency Commission.

Send NEW Ads and Inquiries to Classified Advertising Division or ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36.

DRAFTSMAN

For detailing Reinforcing Steel, Steel Joists, and similar products. Only those experienced in this or allied fields will be considered. Permanent position, air-conditioned office, 40 hour week, retirement plan, paid vacations, hospitalization and Group insurance plans. Location Richmond, Virginia.

Reply giving brief resume of experience, education and salary expected.

P-9399, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

WANTED

ESTIMATING ENGINEER

Midwestern consulting engineering firm needs engineer with estimating experience for contractors and with consulting experience to organize and head estimating.

P-9002, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

• *POSITIONS VACANT*

(Continued from preceding page)

Wanted: Office Manager and Accountant for firm in sewer and bridge construction. State all qualifications, experience, and salary expected. Location, Southern Indiana. P-9429, Engineering News-Record.

Estimator—Experienced for General Contractor engaged in construction of industrial and commercial buildings. Well established firm in Southern Connecticut offering permanent position with good future for properly qualified man. Reply giving complete resume of education, experience, etc. P-9431, Engineering News-Record.

Chief Estimator with the following qualifications. Graduate Engineer. Mature. Completely Experienced in all phases of reinforcing concrete and heavy building estimating. Must have at least 10 years experience in diversified estimating. Position with one of the largest organizations in the east. Proper opportunity for the right individual with initiative and capacity. Send complete resume of education and experience. P-9365, Engineering News-Record.

Have opening for several resent Civil Engineer Graduates with military obligations completed who desire to learn the construction business. Must be ambitious, aggressive, dependable, use no intoxicants, preferably single, willing to start in the field on industrial buildings and heavy construction, and willing to move. We operate throughout Kansas and adjacent states. Our organization offers excellent opportunity for advancement. We pay top wages. Martin K. Eby Construction Co., Inc., P. O. Box 1679, Wichita, Kansas.

(Continued on opposite page)

ENGINEERS

PERMANENT OPENINGS FOR QUALIFIED MEN EXPERIENCED IN THE DESIGN OR SPECIFICATIONS FOR

AIRPORTS
BRIDGES
BUILDINGS
HIGHWAYS
RAILROADS

PREFER GRADUATE REGISTERED ENGINEERS WHO SEEK LONG RANGE EMPLOYMENT WITH AMPLE OPPORTUNITY FOR PROFESSIONAL DEVELOPMENT AND ADVANCEMENT IN A STEADILY EXPANDING AND GROWING ORGANIZATION.

Paid vacation, sick leave, holiday, overtime. Excellent Employee Benefits Plan provides retirement income plus life and disability insurance. Blue Cross. Moving allowance.

Work will be in the general offices in St. Louis. Interviews can be arranged in Washington, D. C., and San Francisco also.

Please write fully, including salary data, to

SVERDRUP & PARCEL, Inc.
ENGINEERS — ARCHITECTS
915 Olive St. Louis 1, Mo.

Steel Design Engineer

Graduate Engineer interested in full time, permanent employment with nationally prominent structural steel fabricator located in St. Louis. Paid vacations, pension plan and group insurance provided. Experience required, preferable age 30-40. Excellent opportunity for right man interested in structural design.

Reply in writing giving education, age, present salary, and experience resume.

P-9340, Engineering News-Record
520 N. Michigan Ave., Chicago, Ill.

WANTED

SUPERINTENDENT

To manage shop for structural steel fabricator and vessel builder in East. Must know metal fabricating, machining and all kinds of welding processes. Engineering training preferred. Requires energetic person with leadership ability and cost consciousness.

Employs 150 shopmen. Unusual opportunity—salary open.

P-9450, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

CONTROLLER

with extensive corporate experience in heavy construction industry. C.P.A. pref. Must have held similar position in heavy construction with knowhow of budgets, projections, costs control and systems. Salary commensurate with background and ability. Reply must be accompanied with complete resume which will be held in complete confidence.

ROSCOE-AJAX CONSTRUCTION CO. INC.
1107-19th St. N.W., Wash., D. C.

OVERSEAS

An exclusive association for foreign construction workers. Membership is a must. Current authenticated data on all foreign construction projects. Write for free details.

Overseas, Americans, Inc., 7 West 44 St,. New York 36, N. Y. Dept. G

ENGINEERING DESIGN PERSONNEL

Highway & Bridge Designers, Highway & Bridge Draftsmen

Openings in Pennsylvania, Ohio, Maryland & West Virginia

Career opportunities for individuals interested in professional recognition ample opportunity for advancement based on merit, plus employee retirement plan, group life insurance, hospitalization, paid vacation and holidays.

EXPERIENCE REQUIRED

Mail Resume To F. W. AHERN, Personnel Director

MICHAEL BAKER, JR., INC. ***Consulting Engineers***

Baker Building Phone: SPruce 4-3010 Rochester, Penna.

• POSITIONS VACANT

(Continued from opposite page)

Experienced Sanitary Engineer—desired by well-established consulting firm. Must be capable of preparing designs, checking shop drawings, etc., for sewage treatment plants. Location, Maryland. Salary, open. All replies kept confidential. Send resume of qualifications to P-9448, Engineering News-Record.

• POSITIONS WANTED

Const. Supt. twenty six years responsible charge of grading and drainage, asphalt paving, flood control, and bridges. PW-9312, Engineering News-Record.

Const. Supt. 25 yrs experience in commercial buildings. Available now. PW-9328, Engineering News-Record.

Graduate Civil Engineer, age 33. Desires engineering or management position. Background of estimating and engineering on heavy construction, tunnel, and sewer work. Resume to all replies. PW-9361, Engineering News-Record.

Construction Engineer, 33, BSCE, ten years experience with consultants and contractors as superintendent of construction. Toll and State Highways, water and sewage work. Available January 1. P.O. Box 102, Dundee, Illinois.

Civil Engineer, B.S.C.E. 1958 graduate, Canadian, 24. Seeks overseas employment in construction field. Three summers construction experience. PW-9367, Engineering News-Record.

Civil Engineer, BSCE from RPI, EIT, 24; 2 years experience in steel design, fabrication and estimating, 1 year heavy construction. Desire position with contractor, consultant or mfgr. in Conn., Mass., or Upstate N. Y. No military obligations. PW-9406, Engineering News-Record.

Registered Civil Engineer, 20 yrs. experience water supply, sewer, dams, etc., design thru construction; fluent Spanish; locate anywhere. Please state exact duties, salary offered. PW-9380, Engineering News-Record.

Construct'on Superintendent, Project Manager, Negotiator. Foreign and U.S. experience. Utilities, roads, mass housing, general construction. PW-9403, Engineering News-Record.

Construction liaison engineer, 33, civil graduate, aggressive, ambitious, speaks Spanish, French. 12 years varied experience, foreign and domestic, refinery construction, asst. to V.P. engineering, equipment sales, missile support equipment, heavy construction. Desires challenging position with future. Citizen. PW-9426, Engineering News-Record.

Prestressed Concrete Plant Manager or Superintendent BCE. 30. 8 years heavy construction experience in supervisory capacity including 4 years as Field Engineer, Plant Supt. and Plant Manager with major firm engaged in manufacture and installation of prestressed concrete structures. Desire locate in South or West Coast. PW-9425, Engineering News-Record.

Concrete Inspector, Canadian, recent immigrant. Age 30, 10 years experience in hydroelectric and heavy industrial concrete inspection. Member A.C.I. & A.S.T.M. Excel. references. Experienced all phases of control and construction. PW-9472. Engineering News-Record.

Contractor's Engineer. Age 31. At present Project Engineer on heavy construction contract. Available January 1959. PW-9468, Engineering News-Record.

Chief Estimator—Graduate civil engineer, 35 years old. Responsible for estimates on multi-million dollar projects, buildings, sewage treatment plants, power houses, bridges. Careful, judicious buyer. PW-9446, Engineering News-Record.

Civil Engineer M.S. Columbia. Sick of big business, seeks teaching assignment in a pleasant university anywhere in U.S.A. or Canada. Have 10 years design and field experience. Money no consideration. PW-9447, Engineering News-Record.

Structural designer, 20 yrs. exp. on various steel & concrete structures. Four years on bridges. Cornell grad. East or mid-west. PW-9445, Engineering News-Record.

SEARCHLIGHT SECTION

CLASSIFIED ADVERTISING

BUSINESS OPPORTUNITIES - EQUIPMENT - USED or RESALE

DISPLAYED RATES

The advertising rate is $25.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured ⅞ inch vert. on one col., 3 columns—30 in. to a page.

EQUIPMENT WANTED or FOR SALE ADVERTISEMENTS acceptable only in Displayed Style.

UNDISPLAYED RATES

$2.40 a line, min. 3 lines. To figure advance payment count 5 average words as a line.

BOX NUMBERS count as one additional line in undisplayed ads.

DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads.

On account of death & ill health the Madison County Construction Co., Inc., Madison, New York, is offering their complete road building equipment for sale as a unit or in part. Information can be obtained by writing Madison, N. Y. Office or by phoning either business office, Madison, N. Y., Twin Oaks 3-3141 or the field office at Tribes Hill, N. Y., Valley 9-3792.

STRUCTURAL ENGINEERING
ARCHITECTURAL ENGINEERING
OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty-eighth year
WILSON *Engineering Corp.*
College House Offices HARVARD SQ. CAMBRIDGE, MASS.

• CONTRACT WORK WANTED

Survey Party (3 man) fully equipped, licensed, eight years experience highway and sub-division lay out. Available immediately. CWW-9471, Engineering News-Record.

• SPECIAL SERVICES

General Drafting Service.—Valuable restorations capably redrawn. Efficient, accurate, dependable drafting service. P.O. Box 1886, Pittsburgh 30, Pa.

Construction Surveys and Estimates, All Trades. Experienced, fast service on large and small contracts. Chas. M. Walker, B.S. R.E. Ph. FI 6-0647, 114½ E. Univ. Ave., Champaign, Ill.

• BUSINESS OPPORTUNITY

Road builder with tax loss carry forward of approximately $3,000,000 will sell an established well regarded construction business. For full particulars write BO-9469, Engineering News-Record.

• FOR SALE

Pipe Calculator—Perfected "Dial" calculator 5½" in diameter consisting of instant calculations of cut back of miter, saddle, "y" branches on pipe sizes from 2" to 48". Guaranteed accurate. Price $3.00. Dial-A-Cut. P.O. Box 1532, Savannah, Georgia.

• WANTED

Anything within reason that is wanted in the field served by Engineering News-Record can be quickly located through bringing it to the attention of thousands of men whose interest is assured because this is the business paper they read.

Your Inquiries to Advertisers Will Have Special Value . . .

—for you—the advertiser—and the publisher, if you mention this publication. Advertisers value highly this evidence of the publication you read. Satisfied advertisers enable the publisher to secure more advertisers and —more advertisers mean more information on more products or better service—more value—to YOU.

McKIERNAN-TERRY
DOUBLE-ACTING PILE EXTRACTORS

The E2, for average light extracting jobs, withstands up to 50 tons of force exerted by the pulling rig. The E4, for longer, heavier and more stubborn extracting jobs, withstands up to 100 tons.

SERVICE SUPPLY CORPORATION
2002 Erie Ave. Phila. 32, Pa.
BAldwin 9-1950

JUST COMPLETED
FULL REVOLVING FLOATING CRANE "HARBOLD"
capacity 65 tons at 50' radius
boom 125' long
steam power, air controls
4 drum hoist
barge 110 x 48 x 8
FOR SALE, IMMEDIATE DELIVERY
HAVRE DE GRACE SHIPYARD, INC.
Havre De Grace, Maryland

1201 Combination Shovel and Dragline. Serial No. 324613. Standard Shovel Front. Machine Completely Rebuilt. Nov. 1957 New Cummins R. L. Diesel Engine. Not used after being rebuilt. Price Comb. $40,000. Shovel Front only $4,500

McCarthy Horizontal Bank Drill. Self propelled New Engine. Machine Excellent Condition. Price $2,500.00

Compton Coal Auger Model 36 Serial No 7-1055-071-F 160 ft. 28" Augers. Excellent Condition. Price $30,000.

Chicago—Pneumatic Air Compressor 110 C.F.M. Practically New. Price $1500.

Allis-Chalmers Road Patrol. Tandem drive Model A. D. 3. Good Condition. Price $1500. Located Portersville, Pennsylvania.

W. R. WINTERS c/o Laura Andreas
Room 930 Boatmens Bank Bldg.
314 North Broadway St. Louis, Mo.
Phone: Chestnut 14471

FOR SALE
BULLDOZER—Allis-Chalmers HD-20 with Baker Blade. A good running '54 unit attractively priced.
ANDERSON EQUIPMENT CO.
Box 427, Bridgeville, Pa. (Pittsburgh area)
Phone: LEhigh 1-6029

FOR SALE OR LEASE
20 TON P & H TRUCK CRANE
Model 255-A Serial No. 9364, with 50' boom and 20' jib, outrigger floats, screw jacks and pads—Excellent condition—$20,000.00. May be seen at 3406 Lenox Road, N. E.
ATLANTA 5, GA. PAUL HANSON
PHONE—CEDAR 3-5435

FOR SALE
LOCOMOTIVES

Baldwin - Westinghouse standard gauge 140 Ton 750 H.P. diesel electric LOCOMOTIVES.

3—1955—G.E. 80 ton—42" gauge can be converted to 36" or 4' 8½ standard gauge.

ALSO

25—44—65 ton LOCOMOTIVES.

Other Railway & Construction Equipment.

JUDGE TRANSPORTATION CONSTRUCTION INC.
7010 EMPIRE STATE BLDG.
NEW YORK 1, N. Y.

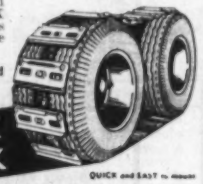
CONTRACTORS · TRUCKERS · DRILLERS · CRANE OPERATORS
READY-MIX TRUCKERS · LOGGERS · MINE OWNERS · PIPE LAYERS

CONVERT YOUR Rubber-Tire EQUIPMENT to CRAWLER PERFORMANCE

Save 50%-ACT NOW!

MUD — SAND — SNOW — SWAMPS won't stop you! Flotation is increased 500% and Traction 300% TRUCK TRACK fits small as well as large tire sizes.

$200.00 and up



Durable Drop Forged Steel Construction Interchangeable

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QUICK and EASY to mount

Send for Literature and FREE ESTIMATE

TRUCK TRACK SALES COMPANY
6112 Broadway Ave. Cleveland 27, Ohio Phone DI 1-7373

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RENTALS

Manitowoc 3900's — **Crawlers** 3500's

Latest Models
Long Booms and Jibs

TRUCK CRANES

Link Belt and Bay City. Cap. to 35 Tons. Booms to 150 ft. Hoists-Welders-Generators

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LOW COST INSTALLATION AND OPERATION

CABLEWAYS
IMMEDIATE SHIPMENT
ELECTRIC, STEAM or DIESEL
CAPACITY 3 to 20 TONS
SELL, RENT or BUY
FOR DAMS BRIDGES BREAKWATERS FILTRATION AND SEWERAGE PLANTS
FOR SPEED ECONOMY EFFICIENCY FLOOD SAFETY LABOR REDUCTION

AMBURSEN DAM CO. INC.
295 MADISON AVE. NEW YORK

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SURPLUS NEW and USED — **For Sale, Wanted or Rent**

WHIRLEY CRANE FOR SALE

American Revolver, Model 685, electric, with traveling gantry, 95' boom, 150 HP electric, excellent, immediate shipment.

GEORGE M. MERIWETHER, INC.
1712 7th Av. No. FA 4-2456 Birmingham 4, Ala.

H & STEEL SHEET PILING

3700 PCS. BETH. SP6, A65' 50' 56' & 48' & 40'
450 PCS. MP112—12' 25' 40' & 60'
447 PCS. BETH.—AP3 25 & 30, 40 & 60 FT.
790 PCS. BETH.—DP2—31' 35' 40' 50' 60'
1200 PCS. ZP38-ZP32—25' 36' 50-60' & 65'
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112—8'—300 15'—92 pcs 20' Corrugated

PILING BOUGHT—SOLD—RENTED
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12—Gen Elec. 100, 80, 65, 45 & 25 ton
5—Plymouth 10, 20 & 35 ton

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60. E. 42nd St. N. Y. 17, N. Y.
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We do a Nation-wide business in

STEEL SHEET PILING

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815 pcs. 75 to 30 ft. Beth. SP-5a—New York
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103 pcs. 60 ft. MZ-27—Tennessee
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Other lengths and sections at various locations. Storage yards at CHICAGO, BUFFALO & MEMPHIS.
Also 10" x 42# and 12" x 53# BP 60' in stock.

PILE DRIVING EQUIPMENT

VULCAN AND McKIERNAN-TERRY PILE HAMMERS & EXTRACTORS
All Sizes—For Rent & Sale—Immediate Shipment

MISSISSIPPI VALLEY EQUIPMENT CO.
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MODEL 4500 MANITOWOC SPEEDCRANE

Serial #4566, complete with 140' Boom (45' bottom steel, 38' top aluminum, 37' center aluminum). Caterpillar D386 Diesel engine, air controls, full revolving fairlead, 25'9" crawlers, 60" crawler treads, 5 KW Koehler light plant complete with lights, one 20' aluminum boom insert, air windshield wiper; including bucket. Located in Florida.

Owner: C. B. HOPPE, Box 590, Palm Beach, Fla.
Phone: Temple 2-2479

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HY DRACHMAN STEEL CORP.

STRUCTURAL STEEL

The Contractors Steel Supply House
52-25 2nd St., Long Island City, N. Y.
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When you need
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use this section, as many contractors do, as a piling buying directory. It can save you time when you want to know, quickly, where to buy good new or used piling.

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PILING • CULVERTS
ASBESTOS-CEMENT PIPE • ALUMINUM PIPE

ALBERT PIPE SUPPLY CO., Inc.
103 VARICK AVE., BROOKLYN 37, N.Y.

ASSOCIATED PIPE & FITTING CO., INC.

PILING PIPE SHELLS MANDREL FITTINGS	"H" BEARING PILE SLEEVES AND SHOES	K & M ASBESTOS CEMENT PIPE	CULVERTS CIRCLE ARCH. SECTIONAL

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STOCKS AVAILABLE IN:
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In Florida Call: Port Everglades Steel Co. Ft. Lauderdale—JA. 4-6545
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150	MP-112	50 to 60'	Chicago
450	MP-116	35 to 60'	Chicago
175	MP-115	50 to 60'	Chicago
180	MP-112	19 to 20'	Nebraska
1300	SP-6a	15 to 47'	New York

CONMACO, INC.
PHONE DRexel 1-3930
804 KANSAS AVE., KANSAS CITY, KANSAS

EST. 1904

DAVIDSON PIPE SUPPLY CO. INC.
Seamless and Welded Steel Pipe
Fittings, Valves
Pipe Fabricating
Call GEdney 9-6300
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PIPE
VALVES and FITTINGS
All Sizes in Stock
NEW-USED
GREENPOINT PIPE SUPPLY CORP.

FORSYTHE
EQUIPMENT CO., INC.

MANITOWOC SPEEDCRANES

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Capacities to 70 Tons
Booms to 140 ft. and 30 ft. jibs
Special rates on long rentals

Exeter 2-6125 37-11 Vernon Blvd.
Long Island City 1, New York

FOR SALE OR RENT

30 TON BROWNING DIESEL LOCO. CRANE
80 TON GE DIESEL ELEC. LOCO. NEW 1950
65 TON WHITCOMB DIESEL ELEC. LOCO.
44 TON GEN. ELEC. DIESEL ELEC. LOCO.
25 TON WHITCOMB DIESEL ELEC. LOCO. 1948
50 TON AMER. GUY DERRICK, 115' MAST, 100' BM.
90 HP LIDGERWOOD 2D DIESEL HOIST W/-SWINGER
2½ YD. LINK-BELT K-395 DIESEL CRANE, 120' BM.
110 HP CLAYTON PORT. STEAM GENERATOR

Also Other Constr. & Ry. Equip.

WHISLER EQUIPMENT CO.
1905 Railway Exchange Bldg., St. Louis 1, Mo.
CHestnut 1-4474

SURVEYING INSTRUMENTS
USED • REBUILT • SALE
RENT • REPAIRING

TRANSITS AND LEVELS

New or Rebuilt
Sale or Rent

Headquarters for REPAIRS — any make — Factory Service. We will also buy your old instruments or take them in trade.

A complete line of Engineering Instruments and equipment for field or office. Write for catalog NLR 812.

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Manufacturers of Transits and Levels
136 No. 12th St., Philadelphia 7, Penna.

ALL MAKES
RE-BUILT REPAIRS RENT REAL EXPERTS
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TRANSITS & LEVELS
Various Makes
NEW & REBUILT

Fully equipped modern shops — all makes and models repaired — all work guaranteed — prompt service — complete line field supplies.

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Midwest Representatives: W. & L. E. Gurley, Distributors—Filotenica Salmoiraghi

NATIONAL BLUE PRINT CO.
Established 1911
210 S. Canal St. Chicago (6), Ill.

Now! NEW ISSUE TRUCKS

Bring You HIGH SPEED In 6 x 6's!

GMC—MACK—
REO "EAGER BEAVER"

- LOW, LOW PRICES!
- GUARANTEED!
- TROUBLE-FREE!
- IN CURRENT OPERATION BY ARMY AND NATIONAL GUARD UNITS!

• *Complete Parts Stock!*
• *Immediate Delivery!*

AT LAST—High Speed combined with power, outstanding performance, rugged get-up-and-go — bring you everything you've been looking for in a truck!

And what a selection! Whatever your job, here's the truck for you. **The rough and ready Mack! The powerful, rugged GMC! The outstanding Reo "Eager Beaver!"** Each model the latest, most advanced truck engineering available today—at prices so low it's hard to believe. All with steel cab kits.

Contact us, too, for the complete line of unused army trucks!

For specifications, prices, delivery— write, wire or phone collect

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CONSTRUCTION EQUIPMENT

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CRAWLERS — Capacities to 60 tons, Booms to 180 ft.
TRUCK CRANES — Capacities to 35 tons, Booms to 130 ft.

P and H. Lima and Manitowoc.
Top-Condition erection cranes

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CRANE SERVICE, INC.
East Hartford, Connecticut JAckson 8-4106

RAILS-TIES
TRACK ACCESSORIES
NEW and RELAYING

RAILROAD Cross and Switch **TIES**
Promptly from adequate stocks
NEW and USED *(as available)*
GILLIS & COMPANY
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FOR SALE
— Project Liquidation —
TUNNEL FORMS

72 L.F. of 19' Diameter horseshoe steel tunnel forms (9 - 8' sections) No carrier jumbos

1 special steel fabricated invert slip form-screed for 19' Diameter horseshoe invert.

Also
PERSONNEL CABLEWAY

Cage dimensions 7' 3" wide by 12' 4" long by 7' 6" high. Operated by Joshua-Hendy Hoist with 75 h.p. electric motor.

Contact
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UTAH-BATES & ROGERS
P.O. Box 730 Oroville, California
Phone: Lennox 3-3443

LOCOMOTIVES & LOCOMOTIVE CRANES
1—25 Ton Diesel Electric Locomotive
1—45 Ton G. E. Diesel Electric Locomotive
1—25 Ton Ohio Diesel Locomotive Crane
1—30 Ton Brawning Diesel Locomotive Crane
1—25 Ton Bay City 190T61 Truck Crane

B. M. WEISS COMPANY
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Supervision of Construction
and Operation
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MIDDLE ATLANTIC

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Engineers and Consultants
Highways—Structures
Traffic—Parking
Terminal Facilities
3 William St., Newark 2, New Jersey
Boston Salt Lake City New York

John Clarkeson
Consulting Engineer
Civil Engineers—Consulting Services
Highways, Airports, Bridges
Surveys, Waterfront Facilities
Room 203, Del & Hudson RR Bldg.
Albany, N. Y.

Howard, Needles, Tammen & Bergendoff
Consulting Engineers
Bridges, Structures, Foundations,
Express Highways
Administrative Services
1805 Grand Ave., 99 Church St.
Kansas City 8, Mo., New York 7, N.Y.

E. Lionel Pavlo
Consulting Engineer
Design, Supervision, Reports
Bridges, Highways, Expressways
Marine Structures, Public Works
Industrial Construction, Airports
642 Fifth Ave. New York 19, N. Y.

King & Gavaris
CONSULTING ENGINEERS
Bridges, Highways, Tunnels
Waterfront Structures, Reports
Investigations, Foundations
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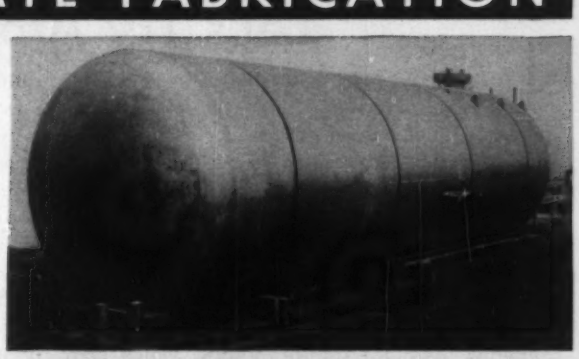

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Chicago's Fire: A Warning for All

THE TRAGIC FIRE in a Chicago school in which 89 children and three teachers perished last week is a grim reminder. It repeats a sad lesson that seems to go unlearned: Making a building fire-safe requires more than mere compliance with the requirements of the law. These requirements are usually of minimum character. Moreover, keeping a building fire-safe entails constant vigilance and good housekeeping to eliminate the thoughtless accumulation of combustible materials in unprotected areas—one of the chief contributing factors to the Chicago holocaust.

Firemen arrived within less than three minutes after the alarm was sounded, and the fire was officially "struck out" in slightly more than an hour. But in that time smoke and flames took 92 lives, injured scores of children. The blaze made corridors, stairs and the single exterior fire escape in the two-story brick and masonry building impossible to reach or descend. Yet, only a few days before, the building had been inspected by a city agency and approved as fire-safe.

Just how safe was this old building, which had been erected in 1910 and remodeled eight years ago? Partitions, ceilings and part of the timber-supported roof collapsed almost immediately, trapping pupils in smoke-filled areas and flaming debris. Dense smoke from the fire, which started in one corner of the basement, spread speedily from bottom to top, up a stairwell, unhindered by fire doors. A fire escape required outside help to function, delaying the escape of many of the children. And perhaps most important of all, there were no fire sprinklers to halt the blaze at or near its source and to provide a protective water curtain for the fleeing occupants of the building.

The fire record shows that such a catastrophe could have been prevented by a sprinkler installation.

The fire-protection principles that were ignored in this school are not new. They were ignored to save money. Was it worth the lives of these children and their teachers? When will we learn that fire protection is not a frill?

Certainly, Chicago is not the only city that permits public occupancy in fire hazards, particularly older structures not covered by new laws requiring adequate fire protection. Can this tragedy happen in your community, in your schools, hotels, dance halls, restaurants, theaters? Here is an opportunity for engineers and architects to perform a public service.

Join with your colleagues, enlist the aid of the public, to see that laws are passed and enforced by the authorities to insure fire safety in all structures.

Let's Try Atomic Excavation

A CLOAK OF REALITY has suddenly enveloped the seemingly far-fetched dream of using nuclear explosions for construction excavation. Reason: The altogether serious proposal made by the scientists of the Plowshare project—who directed the underground explosions program on the Nevada desert—that a harbor be excavated in Alaska by nuclear detonations.

What the scientists claim can be done staggers the imagination. A single megaton bomb buried at a depth of 150 ft, can blow out a 3,000 ft dia crater. Then by exploding four 100-kiloton bombs, which have been properly spaced and buried to a depth of 50 ft, this crater can be connected to the sea by a mile-long channel 1,200 ft wide. Presto! You have a protected harbor.

Such a possibility begs for a try. The U.S. will be dismally negligent if it permits the atomic test-ban negotiations now under way in Geneva with the Russions (see page 25) to stymie testing for peaceful purposes. This is all the more clear in view of the hopeful beliefs of our scientists that the dangers from direct radiation, heat, air blast, ground shock and fallout radioactivity can be reduced to acceptable levels in such a blast.

What matters if no need can be found for a new harbor on the remote cost of Alaska? Here would be a shot heard around the world in the interest of peaceful uses of a great new energy source. What matters if it costs quite a few million dollars? Measured against the many millions already spent on atomic testing it would be a small price for the knowledge gained.

Should the harbor project be undertaken and should it prove the practicability of atomic excavation, where could the process be used? One possibility would be for a new Atlantic-Pacific canal in some presently remote area of Nicaragua, Panama or Colombia. Studies now under way to update the cost estimates for increasing the capacity of the Panama Canal by conventional construction methods may turn up some surprisingly high prices. Atomic blasting might be a good deal cheaper. Using hydrogen bombs would be cheaper yet if some way can be devised to set them off without the necessity of priming each one with an expensive atomic device, say by sympathetic detonation—as is possible with dynamite.

In any event, this is the kind of question that could be studied and the kind of project that might be made possible if the Alaskan harbor experiment is undertaken. Neither the Geneva talks nor lack of imagination here in the U.S. should be allowed to prevent it.

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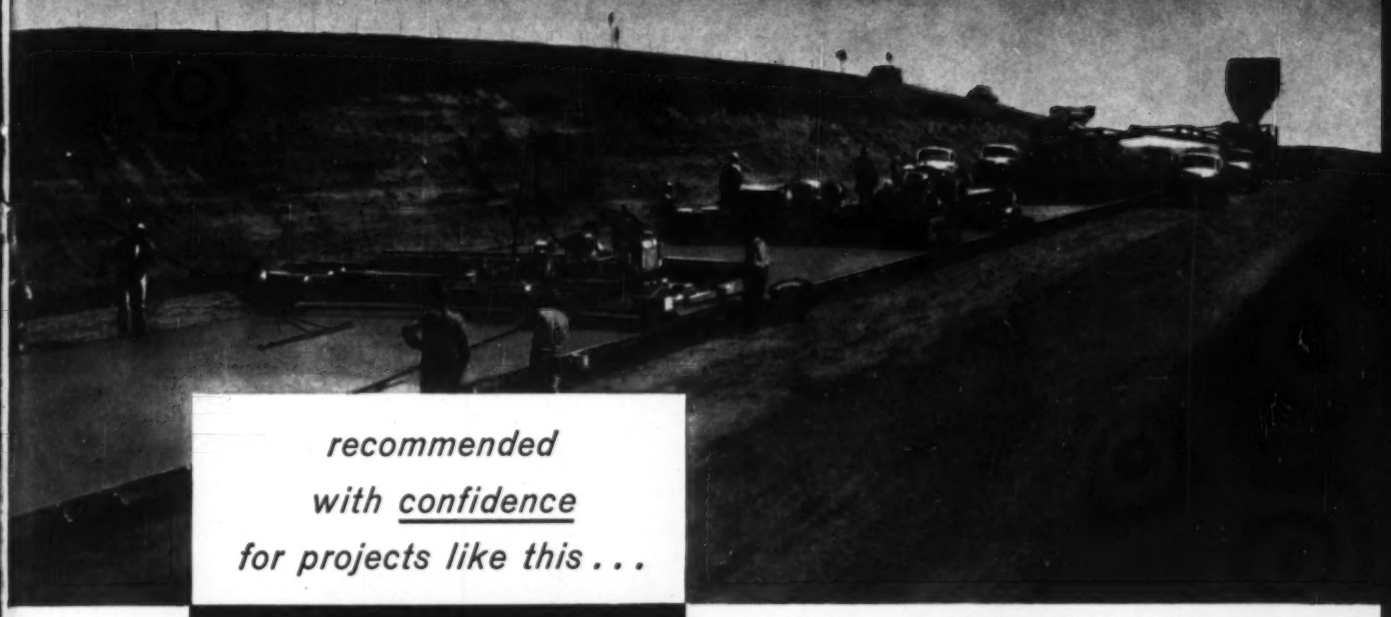

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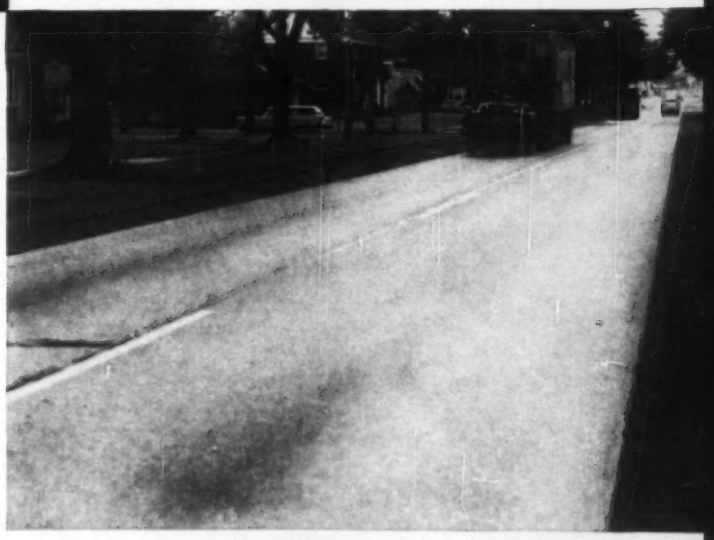
Below: Route 5, approximately 5 miles east of Erie. Pennsylvania State Highway Department. Contractor: Geo. S. Mellert-Weidner Co.



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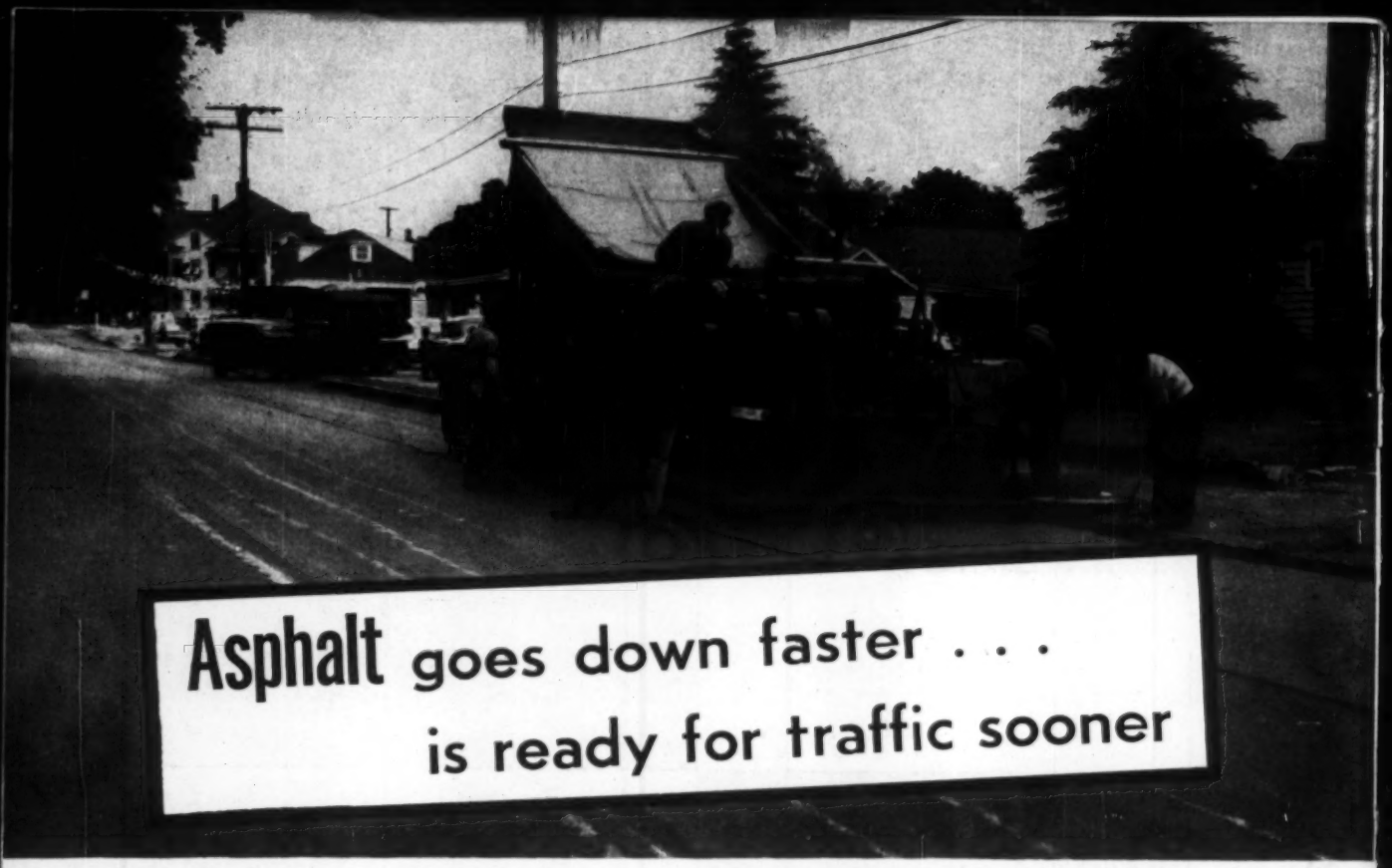

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